

FINAL SUBMITTAL

VOLUME II OF II, APPENDICES E & F

**ENERGY SAVINGS OPPORTUNITY SURVEY
FORT GILLEM, GEORGIA**

Prepared for

**SAVANNAH DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA**

Under

CONTRACT NO. DACA21-91-C-0097

September 1992

EMC No. 3105-000

19971016 247

E M C ENGINEERS, INC.
1950 Spectrum Circle
Suite B-312
Marietta, Georgia 30067
Phone (404) 952-3697




DEPARTMENT OF THE ARMY
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS
P.O. BOX 9005
CHAMPAIGN, ILLINOIS 61826-9005

REPLY TO
ATTENTION OF: TR-I Library

17 Sep 1997

Based on SOW, these Energy Studies are unclassified/unlimited.
Distribution A. Approved for public release.


Marie Wakefield,
Librarian Engineering

This report has been prepared at the request of the client, and the observations, conclusions, and recommendations contained herein constitute the opinions of E M C Engineers, Inc. In preparing this report, EMC has relied on some information supplied by the client, the client's employees, and others, which we gratefully acknowledge. Because no warranties were given with this source of information, E M C Engineers, Inc. cannot make certification or give assurances except as explicitly defined in this report.

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
VOLUME I	
List of Abbreviations	ix
EXECUTIVE SUMMARY	
1.0 INTRODUCTION	
1.1 Authority for Study	1-1
1.2 Purpose of Study	1-1
1.3 Scope of Work	1-1
1.4 Organization of Submittal	1-2
1.5 Work Accomplished	1-2
1.6 Previous Utility Conservation Studies	1-6
2.0 UTILITY CONSUMPTION AND RATES	
2.1 General	2-1
2.2 Utility Rates	2-1
2.2.1 Electrical Rates	2-1
2.2.2 Natural Gas Rates	2-2
2.2.3 Water and Sewer Rates	2-3
2.3 Historical Consumption of Utilities	2-3
2.3.1 Historical Electrical Energy Consumption	2-3
2.3.2 Historical Natural Gas Consumption	2-6
2.4 Summary of Utilities	2-8
2.5 Basis for Economic Analysis	2-8
2.5.1 ECIP Guidance	2-8
2.5.2 Basis for Energy Cost Savings Benefits	2-9
2.5.3 Basis for Labor and Material Costs	2-10
2.6 Demand Side Management	2-10
3.0 EVALUATION OF ENERGY CONSERVATION OPPORTUNITIES	
3.1 General	3-1
3.2 ECOs Evaluated	3-1
3.3 Analysis Methodology	3-6
3.4 ECO Analysis	3-7
3.4.1 ECO 1 - Insulation	3-8
3.4.1.1 Insulate Walls and Roofs	3-8
3.4.2.1 Insulate Pipes and Ducts	3-13
3.4.2 ECO 2 - Insulated Windows	3-18
3.4.3 ECO 3 - Weatherstripping and Caulking	3-20
3.4.4 ECO 4 - Domestic Hot Water Temperature	3-23
3.4.5 ECO 5 - Install High Efficiency Electric Motors	3-25

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
3.4.6 ECO 6 - Economizers	3-28
3.4.7 ECO 7 - Control Hot Water Circulation Pump	3-31
3.4.8 ECO 8 - Install Low-Flow Shower and Faucet Fixtures	3-34
3.4.9 ECO 9 - Heat Reclaim from Hot Refrigerant Gas	3-37
3.4.10 ECO 10 - Prevent Air Stratification	3-40
3.4.11 ECO 11 - Replace Street Lights	3-43
3.4.12 ECO 12 - Revise or Repair HVAC Controls	3-46
3.4.13 ECO 13 - Thermal Storage	3-49
3.4.14 ECO 14 - Radiant Heaters and Loading Dock Seals	3-51
3.4.14.1 - Radiant Heaters	3-51
3.4.14.2 - Loading Dock Seals	3-54
3.4.15 ECO 15 - Separate Light Switches	3-57
3.4.16 ECO 16 - Investigate Post Demand Usage	3-62
3.4.17 ECO 17 - Boiler Operation Schedule	3-71
3.4.18 ECO 18 - Replace Exit Sign Bulbs with Fluorescent Bulb Kit	3-73
3.4.19 ECO 19 - Previous Lighting Study Review	3-76
3.5 ECO Project Summary	3-79
3.6 Results	3-85
 4.0 ENERGY CONSERVATION PROJECTS	
4.1 Project Development	4-1
4.2 ECIP Projects	4-2
4.3 Non-ECIP Projects	4-2
4.3.1 QRIP Project	4-2
4.3.2 MCA Program-1	4-2
4.3.3 MCA Program-2	4-5
4.3.4 Low-Cost/No-Cost Project	4-5
4.4 NAF Projects	4-6
 5.0 SUMMARY AND RECOMMENDATIONS	
5.1 Summary	5-1
5.1.1 ECOs Evaluated	5-1
5.1.2 Results	5-1
5.1.3 Energy Project Development	5-6
5.2 Recommendations	5-8

TABLE OF CONTENTS (Continued)

LIST OF APPENDICES

VOLUME I

- A SCOPE OF WORK AND CONFIRMATION NOTICES
- B UTILITY RATES AND HISTORICAL CALCULATIONS
- C ECO BACKUP CALCULATIONS
 - C-1.1 WALL INSULATION
 - C-1.2 ROOF INSULATION
 - C-1.3 PIPE AND DUCT INSULATION
 - C-2 INSULATED GLASS
 - C-3 WEATHERSTRIPPING AND CAULKING
 - C-4 MEASURE HOT WATER TEMPERATURES
 - C-5 ELECTRIC MOTORS
 - C-6 ADD ECONOMIZERS
 - C-7 CONTROL HOT WATER CIRCULATION PUMPS
 - C-8 INSTALL LOW-FLOW SHOWER AND FAUCET FIXTURES
 - C-9 HEAT RECLAIM FOR HOT REFRIGERANT GAS
 - C-10 PREVENT AIR STRATIFICATION
 - C-11 REPLACE STREET LIGHTS
 - C-12 REVISE OR REPAIR HVAC CONTROLS
 - C-13 THERMAL STORAGE
 - C-14.1 LOADING DOCK SEALS
 - C-14.2 RADIANT HEATERS
 - C-15.1 BUILDING 200 LIGHTING CONTROLS
 - C-15.2 SEPARATE SWITCHES TO CONTROL LIGHTING
 - C-16 INVESTIGATE POST DEMAND USAGE
 - C-17 EVALUATE BOILER OPERATION
 - C-18 EXIT SIGN RETROFIT
 - C-19 LIGHTING UPGRADES
 - C-20 COMPUTER SIMULATION SUMMARIES
- D ECO PROJECT BACKUP CALCULATIONS
 - D-1 ECIP PROJECT
 - D-2 QRIP PROJECT
 - D-3 FAMILY HOUSING PROJECT
 - D-4 NAF PROJECT
 - D-5 OTHER ENERGY PROJECTS

VOLUME II

- E COMPUTER SIMULATIONS
- F FIELD SURVEY NOTES

TABLE OF CONTENTS (Continued)

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1-1	Scope of Work Summary	1-4
2-1	Electrical Energy Consumption	2-4
2-2	Natural Gas Consumption	2-6
2-3	FY91 Utility Usage and Cost Comparison	2-8
2-4	Uniform Present Worth Factors	2-9
3-1	Energy Conservation Opportunities List	3-2
3-2	Nonfeasible ECOs	3-3
3-3	Buildings Added	3-3
3-4	Building ECO Matrix	3-4
3-5	Computer Simulation Buildings	3-7
3-6	Wall Insulation	3-11
3-7	Roof Insulation	3-12
3-8	Duct and Pipe Recommended Thicknesses	3-16
3-9	Pipe Insulation	3-17
3-10	Duct Insulation	3-17
3-11	Insulated Windows	3-19
3-12	Weatherstripping and Caulking	3-22
3-13	Domestic Hot Water Temperature Measurements	3-24
3-14	Install High Efficiency Electric Motors	3-27
3-15	Economizers	3-30
3-16	Control Hot Water Circulation Pump	3-33
3-17	Install Low-Flow Shower and Faucet Fixtures	3-36
3-18	Heat Reclaim from Hot Refrigerant Gas	3-39
3-19	Prevent Air Stratification	3-42
3-20	Replace Street Lights	3-45
3-21	Revise or Repair HVAC Controls	3-48
3-22	Thermal Storage	3-50
3-23	Radiant Heaters	3-53
3-24	Loading Dock Seals	3-56
3-25	Separate Light Switches	3-60
3-26	FY91 Historical Electrical Demand - Fort Gillem	3-67
3-27	Demand Savings Comparison	3-70
3-28	Replace Exit Sign Bulbs with Fluorescent Bulb Kit	3-74
3-29	Previous Lighting Study Review	3-78
3-30	Energy Conservation Opportunities List	3-80
3-31	Economic Summary of ECOs, Listed by ECO Number	3-81
3-32	Economic Summary of ECOs, Listed by SIR	3-83

TABLE OF CONTENTS (Continued)

LIST OF TABLES

<u>Table</u>		<u>Page</u>
4-1	MCA Project-1 Summary	4-4
4-2	NAF Economic Summary	4-7
5-1	Economic Summary of ECOs, Listed by ECO Number	5-2
5-2	Economic Summary of ECOs, Listed by SIR	5-4
5-3	Projects Economic Summary	5-7

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
2-1	Electrical Consumption	2-5
2-2	Natural Gas Consumption	2-7
3-1	FY91 Typical Hourly Demand, Summer - Fort Gillem	3-68
3-2	FY91 Typical Hourly Demand, Winter - Fort Gillem	3-69

LIST OF ABBREVIATIONS

ACH	-	air changes per hour
AAFES	-	Army Air Force Exchange Service
AHU	-	air handling unit
Bldg	-	building
cfm	-	cubic feet per minute
conf.	-	confirmation
DCU	-	digital control unit
DDC	-	direct digital control
DEH	-	Director of Engineering and Housing
DHW	-	domestic hot water
DX	-	direct expansion
ECIP	-	Energy Conservation Investment Program
ECO(s)	-	Energy Conservation Opportunity(ies)
ESOS	-	energy savings opportunity survey
F	-	Fahrenheit
FCU	-	fan coil unit
ft	-	foot, feet
FY	-	fiscal year
gpm	-	gallons per minute
hp	-	horsepower
HPS	-	high pressure sodium
hr	-	hour(s)
HW	-	hot water
in.	-	inch(es)
kVar	-	kilovolt amp reactive
kW	-	kilowatt, one thousand watts
kWh	-	kilowatt-hour, one thousand watthours
LAPS	-	lighting automation panels
LBH	-	pounds per hour
lbm	-	pounds mass
LCCID	-	Life Cycle Cost in Design
MBtu	-	British thermal units (thousand)
mcf	-	thousand cubic feet

LIST OF ABBREVIATIONS

(Continued)

MCA	-	Military Construction Army Program
MCP	-	Military Construction Program
NAF	-	non-appropriated funds
PRV	-	pressure reducing valve
psia	-	pounds per square inch, absolute
psig	-	pounds per square inch, gauge
QRIP	-	Quick Return on Investment Program
RCU	-	remote control unit
rpm	-	revolutions per minute
SES	-	Shared Energy Savings
SIOH	-	supervision, inspection, and overhead
SIR	-	Savings-to-Investment Ratio
SOW	-	Scope of Work
therm	-	100,000 Btus
UCS	-	utility control system
UPW	-	uniform present worth

APPENDIX E

COMPUTER ENERGY SIMULATION BACKUP DATA

BUILDING 101

E M C ENGINEERS, INC.

PROJECT: FORT MCPHERSON & FORT GILLEM ESOS STUDY
 LOCATION: FORT GILLEM
 ECO: Computer Simulation Summary

EMC PROJECT: #3105.000
 DATE: 13-APR-92
 FILE: G101ECO.WK3
 PREPARED BY: R. GERRANS
 CHECKED BY:

CLIENT CONTRACT NO: DACA21-91-C-0097
 CLIENT PROJECT ENG: TERRY SEABROOK

Bldg: G101		Area: 120,182 ft ²										
Run	Description	Heating Gas Use (kBtu/yr)	Heating Electric Use (kWh/yr)	Cooling Electric Use (kWh/yr)	Fan Electric Use (kWh/yr)	Pump Electric Use (kWh/yr)	Lighting Electric Use (kWh/yr)	Recept. Electric Use (kWh/yr)	Total Electric Use (kWh/yr)	Peak Electric Demand (kW)	Total Gas Use (MBtu/yr)	Total Energy Use (Mbtu/yr)
	Baseline	523,833	8,551	299,666	416,645	236,958	729,764	439,234	2,130,817	670	524	7,794
ECO#1	- Wall	305,157	6,736	283,434	416,645	236,958	729,764	439,234	2,112,770	651	305	7,514
	Savings/(Loss)	218,676	1,815	16,232	0	0	0	0	18,047	19	219	280
ECO#2		401,179	6,910	297,925	416,645	236,958	729,764	439,234	2,127,435	661	401	7,660
	Savings/(Loss)	122,653	1,641	1,741	0	0	0	0	3,382	9	123	134
ECO#3		505,158	8,356	299,243	416,645	236,958	729,764	439,234	2,130,199	668	505	7,773
	Savings/(Loss)	18,675	196	423	0	0	0	0	618	2	19	21
ECO#6		523,833	8,551	297,878	416,645	236,958	729,764	439,234	2,129,030	670	524	7,788
	Savings/(Loss)	0	0	1,788	0	0	0	0	1,788	0	0	6
ECO#7		290,370	2,538	277,213	416,645	140,860	729,764	439,234	2,006,253	670	290	7,136
	Savings/(Loss)	233,463	6,013	22,453	0	96,098	0	0	124,564	0	233	658
ECO#12		221,515	2,047	192,948	349,638	132,000	729,764	439,234	1,845,631	613	222	6,519
	Savings/(Loss)	302,318	6,504	106,718	67,007	104,958	0	0	285,187	57	302	1,275
ECO#13		523,833	8,551	312,788	416,645	236,958	729,764	439,234	2,143,939	544	524	7,839
	Savings/(Loss)	0	0	(13,122)	0	0	0	0	(13,122)	126	0	(45)
ECO#15		565,330	9,020	281,067	416,645	236,958	613,004	439,234	1,995,929	670	565	7,375
	Savings/(Loss)	(41,498)	(469)	18,598	0	0	116,760	0	134,889	0	(41)	419

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation Bldg 101, GilmanERO #1 - Wall InsulationWall U-value

- add R-9 to existing wall

$$R = 13.01$$

$$U = 0.08$$

$$\text{original } U = 0.25$$

$$\text{Area} = 35,512 \text{ ft}^2$$

$$\text{original } UA = 8,878$$

$$\text{Improved } UA = 2,841$$

$$\Delta UA = 6,037$$

Electric Savings

$$\text{Total Electric Savings} = 18,047 \text{ kWh/yr}$$

$$\text{Electric Savings} / \Delta UA = \boxed{3.0} \text{ kWh} / \Delta UA$$

Demand Savings

$$\text{Peak Demand Savings} = 19 \text{ kW}$$

$$\text{Demand Savings} / \Delta UA = \boxed{3.1 \times 10^{-3}} \text{ kW} / \Delta UA$$

Gas Savings

$$\text{Total Gas Savings} = 219 \text{ MBtu/yr}$$

$$\text{Gas Savings} / \Delta UA = \boxed{0.036} \text{ MBtu} / \Delta UA$$

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation Bldg 101, Gilman

ECO # 2 - Insulated glass

Window U-Value - ASHRAE F 27.13

- double pane, Al frame, argon

$$U = 0.65$$

Window shading coefficient ASHRAE F 27.26

- light blind.

$$\Rightarrow 0.98$$

Window Area = 6,468 ft²

Electric Savings

Total Electric Savings = 3,382 kWh/yr

Electric Savings / ft² = 0.52 kWh / ft²

Demand Savings

Peak Demand Savings = 9 kW

Demand Savings / ft² = 1.4×10^{-3} kW / ft²

Gas Savings

Total Gas Savings = 123 MBtu/yr

Gas Savings / ft² = 0.019 MBtu / ft²

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation

- Bldg 101, Gilliam

ECO #3 - Weather stripping + Caulking

$$Q = L(A \Delta t + B V^2)^{1/2}$$

A - stack coefficient = 0.0629 - 4 stories extrapolated ASHRAE Table F23.7

B - wind coefficient = 0.0034 - medium shielding ASHRAE Table F23.8

V - avg. wind velocity = 12.65 mph

$$\Delta t = 72^\circ\text{F} - 55^\circ\text{F} = 17^\circ\text{F}$$

L - effective length = Area * (in²/ft²) - ASHRAE Table F23.3

$$(A \Delta t + B V^2)^{1/2} = (0.0629(17) + 0.0034(12.65^2))^{1/2} = 1.301$$

Presentwindows : no w.s./c, single, hung, mason wall

window: 0.063

frame: 0.093

doors : no w.s./c, double, mason wall

door: 0.16

frame: 0.072

Improvedwindows : w.s./c, single, hung, mason wall

window: 0.032

frame: 0.019

doors : w.s./c, double, mason wall

door: 0.114

frame: 0.0143

Room 1 - no infiltrationRoom 2window: 30 (28 ft²) = 840 ft²doors: 7 (5'x7') = 245 ft²

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation - Bldg 101, GilmanECU #3 (cont)Room 2 (cont)Present

$$\text{window: } 0.063 (840) = 52.9$$

$$\text{frame: } 0.093 (840) = 78.1$$

$$\text{door: } 0.16 (245) = 39.2$$

$$\text{frame: } 0.072 (245) = \underline{17.6}$$

$$187.9$$

$$Q = 187.9 (1.301) = 244 \text{ cfm}$$

Improved

$$\text{window: } 0.032 (840) = 26.9$$

$$\text{frame: } 0.016 (840) = 16.0$$

$$\text{door: } 0.114 (245) = 27.9$$

$$\text{frame: } 0.0143 (245) = \underline{3.5}$$

$$74.3$$

$$Q = 74.3 (1.301) = 97 \text{ cfm}$$

$$\Delta Q = 244 - 97 = \boxed{147 \text{ cfm}}$$

Room 3 - no infiltrationRoom 4

$$\text{windows: } 63 (28 \text{ ft}^2) = 1,764 \text{ ft}^2$$

Present

$$\text{window: } 0.063 (1,764) = 111.1$$

$$\text{frame: } 0.093 (1,764) = \underline{164.1}$$

$$275.2$$

$$Q = 275.2 (1.301) = 358 \text{ cfm}$$

Improved

$$\text{window: } 0.032 (1,764) = 56.4$$

$$\text{frame: } 0.019 (1,764) = \underline{33.5}$$

$$90.0$$

$$Q = 90.0 (1.301) = 117 \text{ cfm}$$

$$\Delta Q = 358 - 117 = \boxed{241 \text{ cfm}}$$

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation

Bldg 101, Gilliam

ECO #3 (cont)Room 5

$$\text{windows: } 915 (28 \text{ ft}^2) = 2,562 \text{ ft}^2$$

Present

$$\text{window: } 0.063 (2,562) = 167.6$$

$$\text{Frame: } 0.043 (2,562) = 247.4$$

$$415.0$$

$$Q = 415.0 (1.301) = 540 \text{ cfm}$$

Improved

$$\text{window: } 0.032 (2,562) = 85.1$$

$$\text{Frame: } 0.019 (2,562) = 50.5$$

$$135.6$$

$$Q = 135.6 (1.301) = 176 \text{ cfm}$$

$$\Delta Q = 540 - 176 = \boxed{364 \text{ cfm}}$$

Totals

$$\text{Room 2: } 2,052 \text{ cfm} - 147 \text{ cfm} = 1905 \text{ cfm}$$

$$\text{Room 4: } 4,116 \text{ cfm} - 241 \text{ cfm} = 3875 \text{ cfm}$$

$$\text{Room 5: } 5,821 \text{ cfm} - 364 \text{ cfm} = 5457 \text{ cfm}$$

$$\Delta \text{cfm} = \boxed{752 \text{ cfm}}$$

Electric Savings

$$\text{Total Electric Savings} = 668 \text{ kWh/yr}$$

$$\text{Electric Savings/cfm} = \boxed{0.89} \text{ kWh/cfm}$$

Demand Savings

$$\text{Peak Demand Savings} = 2 \text{ kW}$$

$$\text{Demand Savings/cfm} = \boxed{2.7 \times 10^{-3}} \text{ kW/cfm}$$

Gas Savings

$$\text{Total Gas Savings} = 19 \text{ MBtu/yr}$$

$$\text{Gas Savings} = \boxed{0.025} \text{ MBtu/cfm}$$

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation Bldg 101, Gilliam

ECO # 6 - Economizers

- dry bulb economizers on 4th floor AHU's, 100% OA

Electric Savings

Total Electric Savings = 37,833 kWh/yr

Demand Savings

Peak Demand Savings = 0 kW

Gas Savings

Total Gas Savings = 0.0 MBtu/yr

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation

Bldg 101, Galloway

ECO #7 - Pump control- Circulation Pumps - H.W. P-W removed

- Cycle w/ load

- Time clock: on 06:00 - 18:00 M-F, off otherwise
for values 3, 4, 6- D.H.W. Pumps

- 1/2 HP

- Time clock on 06:00 - 18:00 M-F, off otherwise - off 5:31 hrs

$$\text{Savings} = \frac{(1.25 \text{ HP}) (0.746 \text{ kW/HP}) (0.80) (5631 \text{ hrs})}{(1.764 \text{ HP})} = \boxed{1.168} \text{ kW/yr}$$

Total Usage

$$C4W1 + C4W2 + D7W + H4W = 1.168$$

$$31,974 + 10,074 + 97,602 + 2,371 - 1.168 = 140,860 \text{ kWh/yr}$$

Demand Savings

$$\text{Peak Demand Savings} = \boxed{0} \text{ kW}$$

Electric Savings

$$\text{Total Electric Savings} = \boxed{124,564} \text{ kWh/yr}$$

Gas Savings

$$\text{Total Gas Savings} = \boxed{233} \text{ MBtu/yr}$$

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation Bldg 101, Gilman

ERO #12 - HVAC Controls

Fan coils (1st + 2nd floor)

- set back thermostat
- Fans on time clock : on: 06:00 - 18:00 M-F, off otherwise
- reset tstat set points; 70°F Heating 78°F cooling

AHU's (4th floor)

- set back thermostat
- Fans on time clock : on: 06:00 - 18:00 M-F, off otherwise
- Reset deck temperature (direct, water)
- Reset tstat setpoints; 70°F Heating 78°F cooling

AHU's (1st + 2nd floor)

- Reset tstat setpoints; 70°F Heating 78°F cooling

ECU's 3rd floor

- Reset tstat setpoints; 70°F Heating 78°F cooling

Pumps

- Add cycling controls

Electric Savings

Total Electric Savings = 285,187 kWh/yr

Demand Savings

Peak Demand Savings = 57 kW

Gas Savings

Total Gas Savings = 302 MBtu/yr

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation Bldg 101, G. floor

ECO # 13 - Thermal Storage

Discharge Tank : 2100 - 15:00

Charge Tank : 0100 - 0600

Tank Capacity: 751 Tons/hr

Chiller Capacity: 125 Tons

Demand Savings

#1 Chiller kW/ton = 1.147 kW/ton

#2 Chiller " = 1.129 kW/ton

#3 Chiller " = 1.064 kW/ton

Peak Hour (Avg) = 116 tons

Peak demand savings = $116 * 1.085 = 125.8 = \boxed{126} \text{ kW}$

Additional Electrical

Additional Electrical = $\boxed{13,122} \text{ kWh/yr}$

% Peak Chiller

11%

19%

70%

$\Rightarrow 1.085 \text{ kW/ton}$

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation Bldg 101, GilmanECO # 15 - Lighting ReductionLight Reduction

reduction = 16%

<u>Rm</u>	<u>Present (w)</u>	<u>Reduced (w)</u>
1	12,100	10,164
2	12,800	10,752
3	18,320	15,309
4	34,930	29,341
5	58,740	49,342
6	<u>28,750</u>	<u>24,150</u>
	166,140	139,558

Reduced kWh = 116,760 kWh/yr

Electric FactorReduced electric use = cooling - heating $18,598 - 496 = 18,102$ kWh/yrElectric savings / lighting kWh = $\boxed{0.16}$ kWh saved / kWh lightingGas Factor

Increased gas use = 41.7 MBtu/yr

Gas increase / lighting kWh = $\boxed{3.6 \times 10^{-4}}$ MBtu / kWh

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB 3105.000
SHEET NO. 1 OF
CALCULATED BY RMP DATE 3/6/92
CHECKED BY DATE
SCALE

Computer Simulation

Bldg Type: Brick Admin

ERO: 1, 2, 3, 6, 12, 18

Bldg 101, G. Low

Location

Area: 120,182 ft²

Assumptions

- Heating db = 72 °F
- Cooling db = 76 °F
- Infiltration: 1 1/2 ACH in fan coil areas
- OA Ventilation: 10% in AHU's

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB 3105.000

SHEET NO. 1 OF

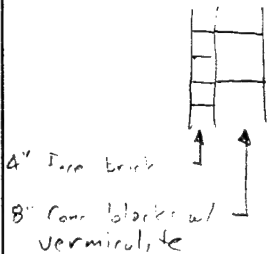
CALCULATED BY R. J. J. DATE 3/6/95

CHECKED BY DATE

SCALE

Comp. Simulation Bldg 101, G. 11th

Wall U-Value - ASHRAE Table F 22.4



Material

R-Value

Outside Surface (15 mph wind)

0.17

4" Face brick

1.24

8" Conc block w/ Vermiculite

1.92

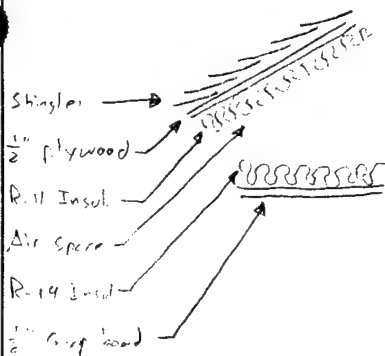
Inside Surface (still air)

0.68

4.01

$$U = \frac{1}{R} = \frac{1}{4.01} = \boxed{0.25}$$

Roof U-Value - ASHRAE Table F 22.4



Material

R-Value

Outside Surface (15 mph wind)

0.17

Shingles

0.44

1/2" plywood

1/2" Plywood

0.62

R-11 Insul.

R-11 Insulation

11.0

Air Space

Air Space

1.24

R-14 Insul.

R-14 Insulation

19.0

1/2" Gyp. board

1/2" Gyp. Board

0.45

Inside Surface (still Air)

0.68

33.6

$$U = \frac{1}{33.6} = \boxed{0.03}$$

Window U-Value - ASHRAE Table F 27.13

- Single pane, casement, Al Frame $\Rightarrow U = \boxed{1.10}$

Window shade - ASHRAE Table F 27.25

- light venetian blind

$$\Rightarrow \boxed{0.67}$$

Slab Perimeter Coefficient - ASHRAE Table F 25.5

$$F_2 = \boxed{0.62} \text{ Btu/h/°F ft}$$

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB 3105.000SHEET NO. 2OF CALCULATED BY RMPDATE 3/5/92CHECKED BY DATE SCALE Camp. S.m Bldg 101, GilmanMisc loads - Assumed

<u>Rm</u>	<u>Ftd./ft²</u>	
1	6	- comp. room + office
2	3	- office
3	6	- comp. room + office
4	4	- office, computer
5	4	- office, computer
6	3	- office, computer

Lighting Loads - From ECO #15

<u>Rm</u>	<u>Watts</u>
1	12,100
2	12,800
3	18,820
4	24,920
5	58,740
6	22,750

People - From field survey estimates

<u>Rm</u>	<u>People</u>
1	66
2	36
3	45
4	80
5	192
6	77

Infiltration

- Only in fan-coil areas

- Assume $1\frac{1}{2}$ Air changes/hour

- very drafty as per field survey

Ventilation

- Assume 10% OA - from mech. equip. schedules

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Computer Simulation

Bldg 101, Gilman

Base line (cont)Pumps

$$\text{CHW Pump \#1: } \frac{(10 \text{ HP})(0.746 \frac{\text{kW}}{\text{HP}})(0.35)}{(0.865 \text{ eff})} = 7.3 \text{ kW} * 4,380 \frac{\text{Wh}}{\text{yr}} = 31,974 \text{ kWh/yr}$$

$$\text{CHW Pump \#2: } \frac{(2 \text{ HP})(0.746 \frac{\text{kW}}{\text{HP}})(0.35)}{(0.812 \text{ eff})} = 2.3 \text{ kW} * 4,380 \frac{\text{Wh}}{\text{yr}} = 10,074 \text{ kWh/yr}$$

$$\text{DTW Pump: } \frac{(30 \text{ HP})(0.746 \frac{\text{kW}}{\text{HP}})(0.35)}{(0.90 \text{ eff})} = 21.1 \text{ kW} * 4,380 \frac{\text{Wh}}{\text{yr}} = 92,418 \text{ kWh/yr}$$

$$\text{HW Pump: } \frac{(3 \text{ HP})(0.746 \frac{\text{kW}}{\text{HP}})(0.35)}{(0.812 \text{ eff})} = 2.3 \text{ kW} * 4,380 \frac{\text{Wh}}{\text{yr}} = 10,074 \text{ kWh/yr}$$

236,958 kWh/yr

01 Card - Job Information

Project: FT MCPHERSON & FT GILLEM EEAP
 Location: FT GILLEM, BLDG 101
 Program User: R. GERRANS

-----CARD 08-- Climatic Information -----

	Summer	Winter	Summer	Summer	Winter		Summer	Winter
Weather	Clearness	Clearness	Design	Design	Design	Building	Ground	Ground
Code	Number	Number	Dry Bulb	Wet Bulb	Dry Bulb	Orientation	Reflect	Reflect
ATLANTA								

-----CARD 09-- Load Simulation Periods-----

1st Month	Last Month	Peak	1st Month	Last Month	1st Month	Last Month
Cooling	Cooling	Cooling	Summer	Summer	Daylight	Daylight
Simulation	Simulation	Load Hr	Period	Period	Savings	Savings
MAY	OCT					

----- Load Section Alternative #1 -----

---- Load Alternative ----

Number	Description
1	BLDG G101, BASELINE

-----CARD 20-- General Room Parameters -----

Room	Zone	Reference	Room	Floor	Floor	Const	Plenum	Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Number	Number	Descrip		Length	Width	Type	Height	Ceiling	Floor	Floors	Rooms per	Depth
								Resistance	Height	Multiplier	Zone	
1	1	1ST FL AHU		20697	1		2		10			
2	2	1ST FL FC		10260	1		2		10			
3	3	2ND FL AHU		168.3	62		2		10			
4	4	2ND FL FC		280	73.5		2		10			
5	5	3RD FL FC		29105	1		2		10			
6	6	4TH FL AHU		29105	1		2		10			

-----CARD 21-- Thermostat Parameters -----

Room Number	Cooling Room Design	Room DB	Cooling Room RH	Cooling T'stat Driftpoint	Cooling T'stat Schedule	Heating Room Design	Heating DB	Heating T'stat Driftpoint	Heating T'stat Schedule	T'stat Location Flag	Mass / No. Hrs Average	Carpet On Floor
1	76				CLG	72			HTG			
2	76				CLG	72			HTG			
3	76				CLG	72			HTG			
4	76				CLG	72			HTG			
5	76				CLG	72			HTG			
6	76				CLG	72			HTG			

-----CARD 22-- Roof Parameters -----

Room Number	Roof Number	Roof Equal to Floor?	Roof Length	Roof Width	Roof U-Value	Const Type	Roof Direction	Roof Tilt	Roof Alpha
6	1	YES			.03	39			

-----CARD 24-- Wall Parameters -----

Room Number	Wall Number	Wall Length	Wall Height	Wall U-Value	Wall Constuc Type	Wall Direction	Wall Tilt	Wall Alpha	Ground Reflectance Multiplier
M	1		10	.25	87				
1	1	203.5				45			
1	2	125				135			
1	3	203.5				225			
1	4	188.5				315			
2	1	141.5				45			
2	2	83.5				135			
2	3	141.5				225			
2	4	20				315			
3	1	62				45			
3	2	80				135			
3	3	62				225			
3	4	80				315			
4	1	283				45			
4	2	103.5				135			
4	3	283				225			
4	4	103.5				315			
5	1	345				45			
5	2	163.5				135			
5	3	345				225			
5	4	163.5				315			
6	1	345				45			
6	2	163.5				135			
6	3	345				225			
6	4	163.5				315			

-----CARD 25-- Wall/Glass Parameters -----

Room Number	Wall Number	Glass Length	Glass Width	Pct Glass or No. of Windows	Glass U-Value	Shading Coefficient	External Shading Type	Internal Shading Type	Percent Solar to Ret. Air	Visible Transmittance	Inside Visible Reflectance
M	1	7	4		1.1	.67					

-----CARD 25-- Wall/Glass Parameters -----

Room Number	Wall Number	Glass Length	Glass Width	Pct Glass or No. of Windows	Glass U-Value	Shading Coefficient	External Shading Type	Internal Shading Type	Percent Solar to Ret. Air	Visible Transmittance	Inside Visible Reflectance
1	1			15							
1	2			9							
1	3			6							
1	4			8							
2	1			13							
2	2			7							
2	3			8							
2	4			2							
3	1			5							
3	2										
3	3										
3	4										
4	1			26							
4	2			10							
4	3			19							
4	4			8							
5	1			31							
5	2			18							
5	3			28							
5	4			18							
6	1										
6	2										
6	3										
6	4										

-----CARD 26-- Schedules -----

Room Number	People	Lights	Ventilation	Infiltration	Reheat Minimum	Cooling Fans	Heating Fan	Auxiliary Fan	Room Exhaust	Daylighting Controls
1	ADMPPL	ADMLGTEQ	AVAIL	OFF		AVAIL				
2	ADMPPL	ADMLGTEQ	OFF	AVAIL		AVAIL				
3	ADMPPL	ADMLGTEQ	AVAIL	OFF		AVAIL				
4	ADMPPL	ADMLGTEQ	OFF	AVAIL		AVAIL				
5	G1013PPL	G1013LGT	OFF	AVAIL		AVAIL				
6	ADMPPL	ADMLGTEQ	AVAIL	OFF		AVAIL				

-----CARD 27-- People and Lights -----

Room Number	People Value	People Units	People Sensible	People Latent	Lighting Value	Lighting Units	Lighting Fixture Type	Ballast Factor	Percent Lights to Ret. Air	--- Daylighting --- Reference Point 1	Reference Point 2
1	66	PEOPLE	250	200	12100	WATTS					
2	36	PEOPLE	250	200	12800	WATTS					

-----CARD 27-- People and Lights -----

Room Number	People		People Sensible	People Latent	Lighting		Lighting Fixture Type	Ballast Factor	Percent Lights to Ret. Air		--- Daylighting --- Reference Point 1 Reference Point 2	
	Value	Units			Value	Units			Ret. Air			
3	45	PEOPLE	250	200	18820	WATTS						
4	80	PEOPLE	250	200	34930	WATTS						
5	192	PEOPLE	250	200	58740	WATTS						
6	77	PEOPLE	250	200	28750	WATTS						

-----CARD 28--- Miscellaneous Equipment -----

Room Number	Misc Equipment		Energy Consump Value	Energy Consump Units	Schedule Code	Energy Meter Code	Percent of Load Sensible	Percent Misc. Load to Room	Percent Misc. Sens to Ret. Air	Radiant Fraction	Optional Air Path
	Number	Descrip									
1	1	MISC EQUIP	6	BTUH-SF	ADMLGTEQ	ELEC					
2	1	MISC EQUIP	3	BTUH-SF	ADMLGTEQ	ELEC					
3	1	MISC EQUIP	6	BTUH-SF	ADMLGTEQ	ELEC					
4	1	MISC EQUIP	4	BTUH-SF	ADMLGTEQ	ELEC					
5	1	MISC EQUIP	4	BTUH-SF	G1013EQ	ELEC					
6	1	MISC EQUIP	3	BTUH-SF	ADMLGTEQ	ELEC					

-----CARD 29--- Room Airflows -----

Room Number	Cooling		Heating		Cooling		Heating		--Reheat Minimum--	
	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
1	10	PCT-MCLG	10	PCT-MCLG						
2					1.5	ACH-HR	1.5	ACH-HR		
3	10	PCT-MCLG	10	PCT-MCLG						
4					1.5	ACH-HR	1.5	ACH-HR		
5					1.5	ACH-HR	1.5	ACH-HR		
6	10	PCT-MCLG	10	PCT-MCLG						

-----CARD 32-- Exposed Floor Parameters-----

Room Number	Exposed Floor		Loss Coefficient	Floor Area	Exposed Floor		Const Type	Temp Flag	Cooling Temp	Heating Temp	Adjacent Room No
	Floor Number	Perimeter Length			Floor U-Value						
1	1	700.5	.62								
2	1	386.5	.62								

----- System Section Alternative #1 -----

-----CARD 39-- System Alternative -----

Number	Description
1	BLDG G101, BASELINE

-----CARD 40--- System Type -----

System		OPTIONAL VENTILATION SYSTEM					Fan
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static
Number	Type	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure
1	SZ						
2	FC						
3	SZ						
4	FC						
5	FC						
6	SZ						

-----CARD 41-- Zone Assignment -----

System	Ref #1		Ref #2		Ref #3		Ref #4		Ref #5		Ref #6	
Set	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End	Begin	End
1	1	1										
2	2	2										
3	3	3										
4	4	4										
5	5	5										
6	6	6										

-----CARD 42--- Fan SP and Duct Parameters-----

System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	2.5						SUPPLY			OTHER	DUCTED
2	.5						RETAIR			OTHER	ROOMDK
3	2.5						SUPPLY			OTHER	DUCTED
4	.5						RETAIR			OTHER	ROOMDK
5	.5						RETAIR			OTHER	ROOMDK
6	2.5						SUPPLY			OTHER	DUCTED

-----CARD 45--- Equipment Schedules -----

System	Main	Direct	Indirect	Auxiliary	Main	Main	Reheat	Mech.	Auxiliary
Set	Cooling	Evap	Evap	Cooling	Heating	Preheat	Coil	Humidity	Heating
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil		Coil
1	CLGC				HTGC				
2	CLGC				HTGC				
3	CLGC				HTGC				
4	CLGC				HTGC				
5	CLGC				HTGC				
6	CLGC				HTGC				

----- Equipment Section Alternative #1 -----

-----CARD 59-- Equipment Description / TOD Schedules -----

Alternative Number	Time of Day Schedule	Elec Consump	Elec Demand	Demand Limit	Alternative Description
1					BLDG G101, BASELINE

-----CARD 60-- Cooling Load Assignment-----

Load	All Coil	Cooling										
Asgn	Loads To	Equipment	-Group 1-	-Group 2-	-Group 3-	-Group 4-	-Group 5-	-Group 6-	-Group 7-	-Group 8-	-Group 9-	
Ref	Cool Ref	Sizing	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	
1	1	BLKPLANT	1	1								
2	2	BLKPLANT	3	3								
3	3	BLKPLANT	6	6								
4	4	BLKPLANT	2	2	4	5						

-----CARD 62-- Cooling Equipment Parameters -----

Cool Equip	Num	-----COOLING-----				-----HEAT RECOVERY-----				Seq	Demand
Ref	Code	Of	--Capacity--	---Energy---	--Capacity--	---Energy---	Order	Seq	Limit		
Num	Name	Units	Value	Units	Value	Units	Value	Units	Num	Type	Number
1	EQ1121S	1									
2	EQ1120S	1									
3	EQ1171L	1									
4	EQ1122L	2									

-----CARD 63-- Cooling Pumps and References -----

Cool	---CHILLED WATER---	---CONDENSER---	---HT REC or AUX---	Switch-			
Ref	Full Load	Full Load	Full Load	Full Load	Full Load	Full Load	Full Load
Num	Value	Units	Value	Units	Value	Units	Value
1	7.3	KW					
2	2.3	KW					
4	21.1	KW					

-----CARD 65-- Heating Load Assignment -----

Load	All Coil										
Assignment	Loads To	-Group 1-	-Group 2-	-Group 3-	-Group 4-	-Group 5-	-Group 6-	-Group 7-	-Group 8-	-Group 9-	
Reference	Heating Ref	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	
1	1	2	2	4	5						
2	2	1	1	3	3	6	6				

-----CARD 67-- Heating Equipment Parameters -----

Heat Ref	Equip Code	Number Of	HW Pmp Full Ld	Cap'y	Energy Rate	Seq Order	Switch over	Hot	Misc.	Demand Limit				
Number	Name	Units	Value	Units	Value	Units	Value	Units	Number	Control	Strg	Acc.	Cogen	Number
1	EQ2001	1	21.1	KW	5250	MBH								
2	EQ2002	1	2.3	KW	589.6	MBH								

-----CARD 69-- Fan Equipment Parameters -----

System Set	Cooling Fan	Heating Fan	Return Fan	Exhaust Fan	Auxiliary Supply	Room Exhaust	Optional Ventilation
1	EQ4003						
3	EQ4003						
4	EQ4371						
5	EQ4371						
6	EQ4003						

Utility Description Reference Table

Schedules:

ADMLGTEQ ADMIN LIGHTING AND EQUIPMENT
ADMPPPL ADMIN PEOPLE SCHEDULE
AVAIL AVAILABLE (100%)
CLG COOLING TSTAT SCHEDULE
CLGC COOLING COIL SCHEDULE
G1013EQ G101 3RD FLOOR EQUIPMENT SCHEDULE
G1013LGT G101 3RD FLOOR LIGHTING SCHEDULE
G1013PPL G101 3RD FLOOR PEOPLE SCHEDULE
HTG HEATING TSTAT SCHEDULE
HTGC HEATING COIL SCHEDULE
OFF ALWAYS OFF

System:

FC FAN COIL
SZ SINGLE ZONE

Equipment:

Cooling:

EQ1120S AIR-CLD RECIP <20 TONS
EQ1121S AIR-CLD RECIP 20-35 TONS
EQ1122L AIR-CLD RECIP >55 TONS
EQ1171L AIR-CLD COND COMP 35-60 TONS

Heating:

EQ2001 GAS FIRE TUBE HOT WATER
EQ2002 GAS FIRE TUBE STEAM

Fan:

EQ4003 FC CENTRIF. FAN C.V.
EQ4371 FAN COIL SUPPLY FAN

Schedule Name: ADMLGTEQ

Project: ADMIN LIGHTING AND EQUIPMENT SC

Location:

Client:

Program User:

Comments: OFFICE LIGHTING

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

Hour	Util Percent
0	5
7	80
8	100
12	80
13	100
16	80
17	40
18	5
24	

Starting Month: JAN Ending Month: DEC

Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

Hour	Util Percent
0	5
24	

Schedule Name: ADMPPPL
Project: ADMIN PEOPLE SCHEDULE
Location:
Client:
Program User: D JONES
Comments: OFFICE PEOPLE SCHEDULE

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

Hour	Util Percent
0	0
7	50
8	100
11	80
12	40
13	80
14	100
16	70
17	30
18	0
24	

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

Hour	Util Percent
0	0
24	

Schedule Name: AVAIL
Project: AVAILABLE (100)
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

Hour	Util Percent
0	100
24	

Schedule Name: CLG
Project: COOLING TSTAT SCHEDULE
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

Hour	Temperature
0	76
24	

Schedule Name: CLGC
Project: COOLING COIL SCHEDULE
Location:
Client:
Program User: R. GERRANS
Comments:

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util	Percent
0		0
24		

Starting Month: MAY Ending Month: OCT
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util	Percent
0		100
24		

Starting Month: NOV Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util	Percent
0		0
24		

Schedule Name: G1013EQ
Project: G101 3RD FLOOR EQUIPMENT SCHEDU
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

Hour	Util	Percent
0		20
7		80
8		100
12		80
13		100
16		80
17		40
18		20
24		

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour	Util	Percent
0		20
24		

Schedule Name: G1013LGT
Project: G101 3RD FLOOR LIGHTING SCHEDU
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

Hour	Util Percent
0	80
8	100
12	80
13	100
16	80
24	

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

Hour	Util Percent
0	80
24	

Schedule Name: G1013PPL
Project: G101 3RD FLOOR PEOPLE SCHEDULE
Location:
Client:
Program User: D JONES
Comments: OFFICE PEOPLE SCHEDULE

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

Hour	Util Percent
0	5
7	50
8	100
11	80
12	40
13	80
14	100
16	70
17	30
18	5
24	

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

Hour	Util Percent
0	5
24	

Schedule Name: HTG
Project: HEATING TSTAT SCHEDULE
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 72
24

Schedule Name: HTGC
Project: HEATING COIL SCHEDULE
Location:
Client:
Program User: R. GERRANS
Comments:

Starting Month: JAN Ending Month: APR
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100
24

Starting Month: MAY Ending Month: OCT
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 0
24

Starting Month: NOV Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100
24

Schedule Name: OFF
Project: ALWAYS OFF
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 0
24

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 6
PAGE

**
**
**
**
**
**
**
**
**

TRACE 600 ANALYSIS

by **

FT MCPHERSON & FT GILLEM EEAP
FT GILLEM, BLDG 101

R. GERRANS

Weather File Code: ATLANTA.
Location: ATLANTA, GEORGIA
Latitude: 33.0 (deg)
Longitude: 84.0 (deg)
Time Zone: 6
Elevation: 1,005 (ft)
Barometric Pressure: 28.8 (in. Hg)

Summer Clearness Number: 0.90
Winter Clearness Number: 0.90
Summer Design Dry Bulb: 92 (F)
Summer Design Wet Bulb: 74 (F)
Winter Design Dry Bulb: 22 (F)
Summer Ground Relectance: 0.20
Winter Ground Relectance: 0.20

Air Density: 0.0731 (Lbm/cuft)
Air Specific Heat: 0.2444 (Btu/lbm/F)
Density-Specific Heat Prod: 1.0727 (Btu-min./hr/cuft/F)
Latent Heat Factor: 4,721.8 (Btu-min./hr/cuft)
Enthalpy Factor: 4.3883 (Lb-min./hr/cuft)

Design Simulation Period: May To October
System Simulation Period: January To December
Cooling Load Methodology: TETD/Time Averaging

Time/Date Program was Run: 13:26:13 4/ 7/92
Dataset Name: G101-B .TM

AIRFLOW - ALTERNATIVE 1
BLDG G101, BASELINE

----- S Y S T E M S U M M A R Y -----
(Design Airflow Quantities)

System Number	System Type	----- Main -----					Auxil. Supply Airflow (Cfm)	Room Exhaust Airflow (Cfm)
		Outside Airflow (Cfm)	Cooling Airflow (Cfm)	Heating Airflow (Cfm)	Return Airflow (Cfm)	Exhaust Airflow (Cfm)		
1	SZ	2,123	21,228	21,228	21,228	2,123	0	0
2	FC	0	11,285	11,285	13,337	2,052	0	0
3	SZ	1,130	11,305	11,305	11,305	1,130	0	0
4	FC	0	29,327	29,327	33,443	4,116	0	0
5	FC	0	44,831	44,831	50,652	5,821	0	0
6	SZ	2,445	24,447	24,447	24,447	2,445	0	0
Totals		5,698	142,422	142,422	154,411	17,687	0	0

CAPACITY - ALTERNATIVE 1
BLDG G101, BASELINE

----- S Y S T E M S U M M A R Y -----
(Design Capacity Quantities)

		----- Cooling -----				----- Heating -----						
System	System	Main Sys.	Aux. Sys.	Opt. Vent	Cooling	Main Sys.	Aux. Sys.	Preheat	Reheat	Humidif.	Opt. Vent	Heating
Number	Type	Capacity	Capacity	Capacity	Totals	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Totals
		(Tons)	(Tons)	(Tons)	(Tons)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)
1	SZ	35.8	0.0	0.0	35.8	-238,028	0	0	0	0	0	-238,028
2	FC	21.5	0.0	0.0	21.5	-207,119	0	0	0	0	0	-207,119
3	SZ	20.0	0.0	0.0	20.0	-82,461	0	0	0	0	0	-82,461
4	FC	48.9	0.0	0.0	48.9	-393,153	0	0	0	0	0	-393,153
5	FC	75.8	0.0	0.0	75.8	-553,725	0	0	0	0	0	-553,725
6	SZ	41.2	0.0	0.0	41.2	-249,438	0	0	0	0	0	-249,438
Totals		243.1	0.0	0.0	243.1	-1,723,924	0	0	0	0	0	-1,723,924

The building peaked at hour 15 month 8 with a capacity of 243.0 tons

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600
PAGE

ENGINEERING CHECKS - ALTERNATIVE 1
BLDG G101, BASELINE

----- E N G I N E E R I N G C H E C K S -----										
System Number	Main/ Auxiliary	System Type	Percent	----- Cooling -----				--- Heating ---		Floor Area Sq Ft
			Outside Air	Cfm/ Sq Ft	Cfm/ Ton	Sq Ft /Ton	Btuh/ Sq Ft	Cfm/ Sq Ft	Btuh/ Sq Ft	
1	Main	SZ	10.00	1.03	592.8	578.0	20.76	1.03	-11.50	20,697
2	Main	FC	0.00	1.10	525.1	477.4	25.14	1.10	-20.19	10,260
3	Main	SZ	10.00	1.08	565.1	521.6	23.00	1.08	-7.90	10,435
4	Main	FC	0.00	1.43	599.5	420.7	28.52	1.43	-19.10	20,580
5	Main	FC	0.00	1.54	591.6	384.1	31.24	1.54	-19.03	29,105
6	Main	SZ	10.00	0.84	594.0	707.2	16.97	0.84	-8.57	29,105

System 1 Peak SZ - SINGLE ZONE

***** COOLING COIL PEAK ***** CLG SPACE PEAK ***** HEATING COIL PEAK *****

Peaked at Time ==> Mo/Hr: 8/15 * Mo/Hr: 6/16 * Mo/Hr: 13/ 1
Outside Air ==> OADB/WB/HR: 92/ 74/105.0 * OADB: 96 * OADB: 22

	Space Sens.+Lat. (Btuh)	Ret. Air Sensible (Btuh)	Ret. Air Latent (Btuh)	Net Total (Btuh)	Perct Of Tot (%)	*	Space Sensible (Btuh)	Perct Of Tot (%)	*	Space Peak Space Sens (Btuh)	Coil Peak Tot Sens (Btuh)	Perct Of Tot (%)
Envelope Loads												
Skylite Solr	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Skylite Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Roof Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Glass Solar	45,752	0		45,752	10.65	*	50,008	16.24	*	0	0	0.00
Glass Cond	19,078	0		19,078	4.44	*	22,940	7.45	*	-64,372	-64,372	27.04
Wall Cond	34,427	10,006		44,433	10.34	*	41,008	13.32	*	-58,750	-75,825	31.86
Partition	0			0	0.00	*	0	0.00	*	0	0	0.00
Exposed Floor	0			0	0.00	*	0	0.00	*	-21,715	-21,715	9.12
Infiltration	0			0	0.00	*	0	0.00	*	0	0	0.00
Sub Total==>	99,257	10,006		109,263	25.43	*	113,955	37.02	*	-144,838	-161,912	68.02
Internal Loads						*			*			
Lights	41,297	0		41,297	9.61	*	41,297	13.41	*	0	0	0.00
People	29,700			29,700	6.91	*	16,500	5.36	*	0	0	0.00
Misc	124,182	0	0	124,182	28.90	*	124,182	40.34	*	0	0	0.00
Sub Total==>	195,179	0	0	195,179	45.42	*	181,979	59.11	*	0	0	0.00
Ceiling Load	10,006	-10,006		0	0.00	*	11,918	3.87	*	-17,075	0	0.00
Outside Air	0	0	0	87,507	20.37	*	0	0.00	*	0	-113,854	47.83
Sup. Fan Heat				37,739	8.78	*		0.00	*		37,739	-15.85
Ret. Fan Heat		0		0	0.00	*		0.00	*		0	0.00
Duct Heat Pkup		0		0	0.00	*		0.00	*		0	0.00
OV/UNDR Sizing	0			0	0.00	*	0	0.00	*	0	0	0.00
Exhaust Heat		0	0	0	0.00	*		0.00	*		0	0.00
Terminal Bypass		0	0	0	0.00	*		0.00	*		0	0.00
Grand Total==>	304,442	0	0	429,688	100.00	*	307,853	100.00	*	-161,912	-238,028	100.00

-----COOLING COIL SELECTION-----

	Total Capacity (Tons)	Sens Cap. (Mbh)	Coil Airfl (cfm)	Entering DB/WB/HR Deg F Deg F Grains	Leaving DB/WB/HR Deg F Deg F Grains	Gross Total Floor	Areas Glass (sf) (%)
Main Clg	35.8	429.7	366.1	21,228 77.6 64.5 73.3	60.8 57.9 70.1	20,697	
Aux Clg	0.0	0.0	0.0	0 0.0 0.0 0.0	0.0 0.0 0.0	0	
Opt Vent	0.0	0.0	0.0	0 0.0 0.0 0.0	0.0 0.0 0.0	700	
Totals	35.8	429.7				7,205	1,064 15

-----HEATING COIL SELECTION-----

	Capacity (Mbh)	Coil Airfl (cfm)	Ent Deg F	Lvg Deg F	Type	Cooling	Heating	Clg % OA	10.0	Type	Clg	Htg
Main Htg	-238.0	21,228	67.0	77.5	Vent	2,123	2,123	Clg Cfm/Sqft	1.03	SADB	62.5	79.1
Aux Htg	0.0	0	0.0	0.0	Infil	0	0	Clg Cfm/Ton	592.84	Plenum	77.5	69.4
Preheat	-0.0	21,228	67.0	60.8	Supply	21,228	21,228	Clg Sqft/Ton	578.01	Return	76.0	72.0
Reheat	0.0	0	0.0	0.0	Mincfm	0	0	Clg Btuh/Sqft	20.76	Ret/OA	77.6	67.0
Humidif	0.0	0	0.0	0.0	Return	21,228	21,228	No. People	66	Runarnd	76.0	72.0
Opt Vent	0.0	0	0.0	0.0	Exhaust	2,123	2,123	Htg % OA	10.0	Fn MtrTD	0.4	0.0
Total	-238.0				Rm Exh	0	0	Htg Cfm/SqFt	1.03	Fn BldTD	0.3	0.0
					Auxil	0	0	Htg Btuh/SqFt	-11.50	Fn Frict	0.9	0.0

System 2 Block FC - FAN COIL

***** COOLING COIL PEAK *****						CLG SPACE PEAK *****			***** HEATING COIL PEAK *****					
Peaked at Time ==>						Mo/Hr: 8/15			Mo/Hr: 6/15			Mo/Hr: 13/ 1		
Outside Air ==>						OADB/WB/HR: 92/ 74/105.0			OADB: 96			OADB: 22		

-----COOLING COIL SELECTION-----

	Total Capacity		Sens Cap. (Mbh)	Coil Airfl (cfm)	Entering DB/WB/HR			Leaving DB/WB/HR			AREAS		
	(Tons)	(Mbh)			Deg F	Deg F	Grains	Deg F	Deg F	Grains	Gross Total	Glass (sf)	(%)
Main Clg	21.5	257.9	202.0	11,285	76.1	63.2	69.8	58.6	55.6	63.7	Floor	10,260	
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Part	0	
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ExFlr	387	
0											Roof	0	0
Totals	21.5	257.9									Wall	3,865	840 22

-----HEATING COIL SELECTION-----

	Capacity	Coil Airfl	Ent	Lvg	Type	Cooling	Heating	Clg % OA	0.0	Type	Clg	Htg
	(Mbh)	(cfm)	Deg F	Deg F	Vent	0	0	Clg Cfm/Sqft	1.10	SADB	58.8	89.4
Main Htg	-207.1	11,285	72.2	89.4	Infil	2,052	2,052	Clg Cfm/Ton	525.12	Plenum	77.8	69.2
Aux Htg	0.0	0	0.0	0.0	Supply	11,285	11,285	Clg Sqft/Ton	477.42	Return	76.0	72.0
Preheat	-0.0	11,285	72.2	58.8	Mincfm	0	0	Clg Btuh/Sqft	25.14	Ret/OA	76.0	72.0
Reheat	0.0	0	0.0	0.0	Return	11,285	11,285	No. People	36	Runarnd	76.0	72.0
Humidif	0.0	0	0.0	0.0	Exhaust	0	0	Htg % OA	0.0	Fn MtrTD	0.1	0.0
Opt Vent	0.0	0	0.0	0.0	Rm Exh	0	0	Htg Cfm/SqFt	1.10	Fn BldTD	0.1	0.0
Total	-207.1				Auxil	0	0	Htg Btuh/SqFt	-20.19	Fn Frict	0.2	0.0

System 3 Peak SZ - SINGLE ZONE

***** COOLING COIL PEAK ***** CLG SPACE PEAK ***** HEATING COIL PEAK *****

Peaked at Time ==> Mo/Hr: 8/15 * Mo/Hr: 6/16 * Mo/Hr: 13/ 1
Outside Air ==> OADB/WB/HR: 92/ 74/105.0 * OADB: 96 * OADB: 22

	Space Sens.+Lat. (Btuh)	Ret. Air Sensible (Btuh)	Ret. Air Latent (Btuh)	Net Total (Btuh)	Percnt Of Tot (%)	*	Space Sensible (Btuh)	Percnt Of Tot (%)	*	Space Peak Space Sens (Btuh)	Coil Peak Tot Sens (Btuh)	Percnt Of Tot (%)
Envelope Loads												
Skylite Solr	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Skylite Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Roof Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Glass Solar	2,800	0		2,800	1.17	*	2,520	1.51	*	0	0	0.00
Glass Cond	2,510	0		2,510	1.05	*	3,018	1.81	*	-8,470	-8,470	10.27
Wall Cond	16,683	4,262		20,944	8.73	*	18,762	11.22	*	-26,650	-33,458	40.57
Partition	0			0	0.00	*	0	0.00	*	0	0	0.00
Exposed Floor	0			0	0.00	*	0	0.00	*	0	0	0.00
Infiltration	0			0	0.00	*	0	0.00	*	0	0	0.00
Sub Total==>	21,993	4,262		26,255	10.94	*	24,300	14.53	*	-35,120	-41,928	50.85
Internal Loads						*			*			
Lights	64,233	0		64,233	26.76	*	64,233	38.42	*	0	0	0.00
People	20,250			20,250	8.44	*	11,250	6.73	*	0	0	0.00
Misc	62,608	0	0	62,608	25.08	*	62,608	37.45	*	0	0	0.00
Sub Total==>	147,090	0	0	147,090	61.28	*	138,090	82.60	*	0	0	0.00
Ceiling Load	4,262	-4,262		0	0.00	*	4,793	2.87	*	-6,808	0	0.00
Outside Air	0	0	0	46,600	19.41	*	0	0.00	*	0	-60,631	73.53
Sup. Fan Heat				20,097	8.37	*		0.00	*		20,097	-24.37
Ret. Fan Heat		0		0	0.00	*		0.00	*		0	0.00
Duct Heat PkUp		0		0	0.00	*		0.00	*		0	0.00
OV/UNDR Sizing	0			0	0.00	*	0	0.00	*	0	0	0.00
Exhaust Heat		0	0	0	0.00	*		0.00	*		0	0.00
Terminal Bypass		0	0	0	0.00	*		0.00	*		0	0.00
Grand Total==>	173,345	0	0	240,042	100.00	*	167,183	100.00	*	-41,928	-82,461	100.00

-----COOLING COIL SELECTION-----

	Total Capacity (Tons)	Sens Cap. (Mbh)	Coil Airfl (cfm)	Entering DB/WB/HR Deg F Deg F Grains	Leaving DB/WB/HR Deg F Deg F Grains	Gross Total Floor	Areas Glass (sf) (%)
Main Clg	20.0	240.0	204.2	11,305 77.6 64.5 73.3	60.6 57.6 69.1	10,435	
Aux Clg	0.0	0.0	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0	
Opt Vent	0.0	0.0	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0	
Totals	20.0	240.0				Wall	2,840 140

-----HEATING COIL SELECTION-----

	Capacity (Mbh)	Coil Airfl (cfm)	Ent Deg F	Lvg Deg F	Type	Cooling 1,130	Heating 1,130	Clg % OA 10.0	TEMPERATURES (F)--- Type Clg Htg
Main Htg	-82.5	11,305	67.0	73.8	Vent	0	0	1.08	SADB 62.2 75.5
Aux Htg	0.0	0	0.0	0.0	Infil	0	0	565.13	Plenum 77.3 69.9
Preheat	-0.0	11,305	67.0	60.6	Supply	11,305	11,305	521.64	Return 76.0 72.0
Reheat	0.0	0	0.0	0.0	Mincfm	0	0	23.00	Ret/OA 77.6 67.0
Humidif	0.0	0	0.0	0.0	Return	11,305	11,305	45	Runarnd 76.0 72.0
Opt Vent	0.0	0	0.0	0.0	Exhaust	1,130	1,130	10.0	Fn MtrTD 0.4 0.0
Total	-82.5				Rm Exh	0	0	1.08	Fn BldTD 0.3 0.0
					Auxil	0	0	-7.90	Fn Frict 0.9 0.0

V 600
PAGE

```
***** COOLING COIL PEAK ***** CLG SPACE PEAK ***** HEATING COIL PEAK *****
Peaked at Time ==>           Mo/Hr: 8/15           *           Mo/Hr: 6/16           *           Mo/Hr: 13/ 1
Outside Air ==>           OADB/WB/HR: 92/ 74/105.0   *           OADB: 96           *           OADB: 22
```



--AREAS--

Totals	48.9	587.0	Wall	7,730	1,764	23
--------	------	-------	------	-------	-------	----

--TEMPERATURES (F)--

Total	-393.2	Auxil	0	0	Htg Btuh/SqFt	-19.10	Fn Frict	0.2	0.0
-------	--------	-------	---	---	---------------	--------	----------	-----	-----

System 5 Block FC - FAN COIL

***** COOLING COIL PEAK ***** CLG SPACE PEAK ***** HEATING COIL PEAK *****

Peaked at Time ==> Mo/Hr: 8/15 * Mo/Hr: 6/16 * Mo/Hr: 13/ 1
Outside Air ==> OADB/WB/HR: 92/ 74/105.0 * OADB: 96 * OADB: 22

	Space	Ret. Air	Ret. Air	Net	Perct		Space	Perct		Space Peak	Coil Peak	Perct
	Sens.+Lat.	Sensible	Latent	Total	Of Tot		Sensible	Of Tot		Space Sens	Tot Sens	Of Tot
	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(%)		(Btuh)	(%)		(Btuh)	(Btuh)	(%)
Envelope Loads												
Skylite Solr	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Skylite Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Roof Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Glass Solar	146,300	0		146,300	16.09	*	146,300	19.33	*	0	0	0.00
Glass Cond	47,694	0		47,694	5.25	*	57,350	7.58	*	-160,930	-160,930	29.06
Wall Cond	41,481	14,602		56,083	6.17	*	48,736	6.44	*	-68,450	-92,546	16.71
Partition	0			0	0.00	*	0	0.00	*	0	0	0.00
Exposed Floor	0			0	0.00	*	0	0.00	*	0	0	0.00
Infiltration	239,957			239,957	26.39	*	122,384	16.17	*	-312,203	-312,203	56.38
Sub Total==>	475,431	14,602		490,033	53.89	*	374,770	49.52	*	-541,583	-565,680	102.16
Internal Loads												
Lights	200,480	0		200,480	22.05	*	200,480	26.49	*	0	0	0.00
People	86,400			86,400	9.50	*	48,000	6.34	*	0	0	0.00
Misc	116,420	0	0	116,420	12.80	*	116,420	15.38	*	0	0	0.00
Sub Total==>	403,300	0	0	403,300	44.35	*	364,900	48.21	*	0	0	0.00
Ceiling Load	14,602	-14,602		0	0.00	*	17,157	2.27	*	-24,096	0	0.00
Outside Air	0	0	0	0	0.00	*	0	0.00	*	0	0	0.00
Sup. Fan Heat				11,955	1.31	*		0.00	*		11,955	-2.16
Ret. Fan Heat		3,985		3,985	0.44	*		0.00	*		0	0.00
Duct Heat Pkup		0		0	0.00	*		0.00	*		0	0.00
OV/UNDR Sizing	0			0	0.00	*	0	0.00	*	0	0	0.00
Exhaust Heat		0	0	0	0.00	*		0.00	*		0	0.00
Terminal Bypass		0	0	0	-0.00	*		0.00	*		0	0.00
Grand Total==>	893,333	3,985	0	909,273	100.00	*	756,826	100.00	*	-565,680	-553,725	100.00

-----COOLING COIL SELECTION-----

	Total Capacity	Sens Cap.	Coil Airfl	Entering DB/WB/HR	Leaving DB/WB/HR	Gross Total	Gross (sf)	(%)
	(Tons)	(Mbh)	(cfm)	Deg F Deg F Grains	Deg F Deg F Grains	Floor	29,105	
Main Clg	75.8	909.3	732.7	44,831	76.1 63.2 69.8	60.1 56.5 65.2	Part	0
Aux Clg	0.0	0.0	0.0	0	0.0 0.0 0.0	0.0 0.0 0.0	ExFlr	0
Opt Vent	0.0	0.0	0.0	0	0.0 0.0 0.0	0.0 0.0 0.0	Roof	0
0								
Totals	75.8	909.3				Wall	10,170	2,660 26

-----HEATING COIL SELECTION-----

	Capacity	Coil Airfl	Ent	Lvg	Type	Cooling	Heating	Clg % OA	0.0	Type	Clg	Htg
	(Mbh)	(cfm)	Deg F	Deg F	Vent	0	0	Clg Cfm/Sqft	1.54	SADB	60.3	83.8
Main Htg	-553.7	44,831	72.2	83.8	Infil	5,821	5,821	Clg Cfm/Ton	591.65	Plenum	77.6	69.4
Aux Htg	0.0	0	0.0	0.0	Supply	44,831	44,831	Clg Sqft/Ton	384.11	Return	76.0	72.0
Preheat	-0.0	44,831	72.2	60.3	Mincfm	0	0	Clg Btuh/Sqft	31.24	Ret/OA	76.0	72.0
Reheat	0.0	0	0.0	0.0	Return	44,831	44,831	No. People	192	Runarnd	76.0	72.0
Humidif	0.0	0	0.0	0.0	Exhaust	0	0	Htg % OA	0.0	Fn MtrTD	0.1	0.0
Opt Vent	0.0	0	0.0	0.0	Rm Exh	0	0	Htg Cfm/Sqft	1.54	Fn BldTD	0.1	0.0
Total	-553.7				Auxil	0	0	Htg Btuh/Sqft	-19.03	Fn Frict	0.2	0.0

-----AIRFLOWS (cfm)-----

-----ENGINEERING CHECKS-----

-----TEMPERATURES (F)-----

System 6 Peak SZ - SINGLE ZONE

***** COOLING COIL PEAK ***** CLG SPACE PEAK ***** HEATING COIL PEAK *****
Peaked at Time ==> Mo/Hr: 7/15 * Mo/Hr: 6/16 * Mo/Hr: 13/ 1
Outside Air ==> OADB/WB/HR: 92/ 74/105.0 * OADB: 96 * OADB: 22

	Space	Ret. Air	Ret. Air	Net	Percnt		Space	Percnt		Space Peak	Coil Peak	Percnt
	Sens.+Lat.	Sensible	Latent	Total	Of Tot		Sensible	Of Tot		Space Sens	Tot Sens	Of Tot
	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(%)		(Btuh)	(%)		(Btuh)	(Btuh)	(%)
Envelope Loads												
Skylite Solr	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Skylite Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Roof Cond	0	57,062		57,062	11.55	*	0	0.00	*	0	-37,969	15.22
Glass Solar	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Glass Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Wall Cond	61,630	11,620		73,251	14.83	*	72,410	20.41	*	-101,700	-123,812	49.64
Partition	0			0	0.00	*	0	0.00	*	0	0	0.00
Exposed Floor	0			0	0.00	*	0	0.00	*	0	0	0.00
Infiltration	0			0	0.00	*	0	0.00	*	0	0	0.00
Sub Total==>	61,630	68,683		130,313	26.39	*	72,410	20.41	*	-101,700	-161,781	64.86
Internal Loads												
Lights	98,124	0		98,124	19.87	*	98,124	27.66	*	0	0	0.00
People	34,650			34,650	7.02	*	19,250	5.43	*	0	0	0.00
Misc	87,315	0	0	87,315	17.68	*	87,315	24.61	*	0	0	0.00
Sub Total==>	220,089	0	0	220,089	44.57	*	204,689	57.69	*	0	0	0.00
Ceiling Load	68,683	-68,683		0	0.00	*	77,709	21.90	*	-60,081	0	0.00
Outside Air	0	0	0	99,989	20.25	*	0	0.00	*	0	-131,118	52.57
Sup. Fan Heat				43,461	8.80	*		0.00	*		43,461	-17.42
Ret. Fan Heat		0		0	0.00	*		0.00	*		0	0.00
Duct Heat Pkup		0		0	0.00	*		0.00	*		0	0.00
OV/UNDR Sizing	0			0	0.00	*	0	0.00	*	0	0	0.00
Exhaust Heat		0	0	0	0.00	*		0.00	*		0	0.00
Terminal Bypass		0	0	0	0.00	*		0.00	*		0	0.00
Grand Total==>	350,402	0	0	493,852	100.00	*	354,808	100.00	*	-161,781	-249,438	1

-----COOLING COIL SELECTION-----

	Total Capacity	Sens Cap.	Coil Airfl	Entering DB/WB/HR	Leaving DB/WB/HR	Gross Total	Glass (sf)	(%)
	(Tons)	(Mbh)	(cfm)	Deg F Deg F Grains	Deg F Deg F Grains	Floor	29,105	
Main Clg	41.2	493.9	420.4	77.6 64.5 73.3	60.8 57.9 70.1	Part	0	
Aux Clg	0.0	0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0	ExFlr	0	
Opt Vent	0.0	0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0	Roof	29,105	0
Totals	41.2	493.9				Wall	10,170	0

-----HEATING COIL SELECTION-----

	Capacity	Coil Airfl	Ent	Lvg	Type	Cooling	Heating	Clg % OA	10.0	Type	Clg	Htg
	(Mbh)	(cfm)	Deg F	Deg F	Vent	2,445	2,445	Clg Cfm/Sqft	0.84	SADB	62.5	78.2
Main Htg	-249.4	24,447	67.0	76.5	Infil	0	0	Clg Cfm/Ton	594.03	Plenum	83.4	65.5
Aux Htg	0.0	0	0.0	0.0	Supply	24,447	24,447	Clg Sqft/Ton	707.22	Return	76.0	72.0
Preheat	-0.0	24,447	67.0	60.8	Mincfm	0	0	Clg Btuh/Sqft	16.97	Ret/OA	77.6	67.0
Reheat	0.0	0	0.0	0.0	Return	24,447	24,447	No. People	77	Runarnd	76.0	72.0
Humidif	0.0	0	0.0	0.0	Exhaust	2,445	2,445	Htg % OA	10.0	Fn MtrTD	0.4	0.0
Opt Vent	0.0	0	0.0	0.0	Rm Exh	0	0	Htg Cfm/Sqft	0.84	Fn BldTD	0.3	0.0
Total	-249.4				Auxil	0	0	Htg Btuh/Sqft	-8.57	Fn Frict	0.9	0.0

-----AIRFLOWS (cfm)-----

-----ENGINEERING CHECKS-----

-----TEMPERATURES (F)-----

MAIN SYSTEM COOLING - ALTERNATIVE 1
BLDG G101, BASELINE

----- P E A K C O O L I N G L O A D S -----
(Main System)

Room Number	Description	Peak Time Mo/Hr	Space				Peak Time Mo/Hr	Coil				Coil Air Flow (Cfm)	Coil Sens. Load (Btuh)	Coil Lat. Load (Btuh)
			OA Cond. DB/WB (F)	Rm Dry Blb (F)	Supp. Dry Bulb (F)	Space Air Flow (Cfm)		OA Cond. DB/WB (F)	Rm Dry Blb (F)	Supp. Dry Bulb (F)	Space Lat. Load (Btuh)			
1	1ST FL AHU	6/16	96 72	76	62.5	21,228	8/15	92 74	76	63.2	13,200	21,228	366,097	63,591
Zone	1 Total/Ave.		96 72	76	62.5	21,228		92 74	76	63.2	13,200	21,228	366,097	63,591
Zone	1 Block	6/16	96 72	76	62.5	21,228	8/15	92 74	76	63.2	13,200	21,228	366,097	63,591
System	1 Total/Ave.		96 72	76	62.5	21,228		92 74	76	63.2	13,200	21,228	366,097	63,591
System	1 Block	6/16	96 72	76	62.5	21,228	8/15	92 74	76	63.2	13,200	21,228	366,097	63,591
2	1ST FL FC	6/15	96 73	76	58.8	11,285	8/15	92 74	76	59.6	36,532	11,285	201,975	55,910
Zone	2 Total/Ave.		96 73	76	58.8	11,285		92 74	76	59.6	36,532	11,285	201,975	55,910
Zone	2 Block	6/15	96 73	76	58.8	11,285	8/15	92 74	76	59.6	36,532	11,285	201,975	55,910
System	2 Total/Ave.		96 73	76	58.8	11,285		92 74	76	59.6	36,532	11,285	201,975	55,910
System	2 Block	6/15	96 73	76	58.8	11,285	8/15	92 74	76	59.6	36,532	11,285	201,975	55,910
3	2ND FL AHU	6/16	96 72	76	62.2	11,305	8/15	92 74	76	62.4	9,000	11,305	204,208	35,835
Zone	3 Total/Ave.		96 72	76	62.2	11,305		92 74	76	62.4	9,000	11,305	204,208	35,835
Zone	3 Block	6/16	96 72	76	62.2	11,305	8/15	92 74	76	62.4	9,000	11,305	204,208	35,835
System	3 Total/Ave.		96 72	76	62.2	11,305		92 74	76	62.4	9,000	11,305	204,208	35,835
System	3 Block	6/16	96 72	76	62.2	11,305	8/15	92 74	76	62.4	9,000	11,305	204,208	35,835
4	2ND FL FC	6/16	96 72	76	60.5	29,327	8/15	92 74	76	61.3	55,400	29,327	473,294	113,705
Zone	4 Total/Ave.		96 72	76	60.5	29,327		92 74	76	61.3	55,400	29,327	473,294	113,705
Zone	4 Block	6/16	96 72	76	60.5	29,327	8/15	92 74	76	61.3	55,400	29,327	473,294	113,705
System	4 Total/Ave.		96 72	76	60.5	29,327		92 74	76	61.3	55,400	29,327	473,294	113,705
System	4 Block	6/16	96 72	76	60.5	29,327	8/15	92 74	76	61.3	55,400	29,327	473,294	113,705
5	3RD FL FC	6/16	96 72	76	60.3	44,831	8/15	92 74	76	61.1	94,121	44,831	732,695	176,578
Zone	5 Total/Ave.		96 72	76	60.3	44,831		92 74	76	61.1	94,121	44,831	732,695	176,578
Zone	5 Block	6/16	96 72	76	60.3	44,831	8/15	92 74	76	61.1	94,121	44,831	732,695	176,578
System	5 Total/Ave.		96 72	76	60.3	44,831		92 74	76	61.1	94,121	44,831	732,695	176,578
System	5 Block	6/16	96 72	76	60.3	44,831	8/15	92 74	76	61.1	94,121	44,831	732,695	176,578
6	4TH FL AHU	6/16	96 72	76	62.5	24,447	7/15	92 74	76	63.2	15,400	24,447	420,420	73,431
Zone	6 Total/Ave.		96 72	76	62.5	24,447		92 74	76	63.2	15,400	24,447	420,420	73,431
Zone	6 Block	6/16	96 72	76	62.5	24,447	7/15	92 74	76	63.2	15,400	24,447	420,420	73,431
System	6 Total/Ave.		96 72	76	62.5	24,447		92 74	76	63.2	15,400	24,447	420,420	73,431
System	6 Block	6/16	96 72	76	62.5	24,447	7/15	92 74	76	63.2	15,400	24,447	420,420	73,431

COOLING LOADS AT COIL PEAK - ALTERNATIVE 1
BLDG G101, BASELINE

----- A I R F L O W C O O L I N G L O A D S -----
(At time of Coil Peak)

		----- Ventilation -----			---- Optional Ventilation ---			----- Bypass -----			Ov/Undr Sizing (Btuh)
Room Number	Description	Airflow (Cfm)	Sensible (Btuh)	Latent (Btuh)	Airflow (Cfm)	Sensible (Btuh)	Latent (Btuh)	Airflow (Cfm)	Sensible (Btuh)	Latent (Btuh)	
1	1ST FL AHU	2,123	37,116	50,391	0	0	0	0	0	0	0
Zone	1 Total/Ave.	2,123	37,116	50,391	0	0	0	0	0	0	0
Zone	1 Block	2,123	37,116	50,391	0	0	0	0	0	0	0
System	1 Total/Ave.	2,123	37,116	50,391	0	0	0	0	0	0	0
System	1 Block	2,123	37,116	50,391	0	0	0	0	0	0	0
2	1ST FL FC	0	0	0	0	0	0	0	0	0	0
Zone	2 Total/Ave.	0	0	0	0	0	0	0	0	0	0
Zone	2 Block	0	0	0	0	0	0	0	0	0	0
System	2 Total/Ave.	0	0	0	0	0	0	0	0	0	0
System	2 Block	0	0	0	0	0	0	0	0	0	0
3	2ND FL AHU	1,130	19,766	26,835	0	0	0	0	0	0	0
Zone	3 Total/Ave.	1,130	19,766	26,835	0	0	0	0	0	0	0
Zone	3 Block	1,130	19,766	26,835	0	0	0	0	0	0	0
System	3 Total/Ave.	1,130	19,766	26,835	0	0	0	0	0	0	0
System	3 Block	1,130	19,766	26,835	0	0	0	0	0	0	0
4	2ND FL FC	0	0	0	0	0	0	0	0	0	0
Zone	4 Total/Ave.	0	0	0	0	0	0	0	0	0	0
Zone	4 Block	0	0	0	0	0	0	0	0	0	0
System	4 Total/Ave.	0	0	0	0	0	0	0	0	0	0
System	4 Block	0	0	0	0	0	0	0	0	0	0
5	3RD FL FC	0	0	0	0	0	0	0	0	0	0
Zone	5 Total/Ave.	0	0	0	0	0	0	0	0	0	0
Zone	5 Block	0	0	0	0	0	0	0	0	0	0
System	5 Total/Ave.	0	0	0	0	0	0	0	0	0	0
System	5 Block	0	0	0	0	0	0	0	0	0	0
6	4TH FL AHU	2,445	41,958	58,031	0	0	0	0	0	0	0
Zone	6 Total/Ave.	2,445	41,958	58,031	0	0	0	0	0	0	0
Zone	6 Block	2,445	41,958	58,031	0	0	0	0	0	0	0
System	6 Total/Ave.	2,445	41,958	58,031	0	0	0	0	0	0	0
System	6 Block	2,445	41,958	58,031	0	0	0	0	0	0	0

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1
BLDG G101, BASELINE

----- A I R F L O W H E A T I N G L O A D S -----
(At time of Coil Peak)

Room Number	Description	--- Ventilation ---		---- Op. Vent. ----		----- Reheat -----		----- Humidif. -----		Total (Btuh)
		Airflow (Cfm)	Sensible (Btuh)	Airflow (Cfm)	Sensible (Btuh)	Airflow (Cfm)	Sensible (Btuh)	Airflow (Cfm)	Latent (Btuh)	
1	1ST FL AHU	2,123	-113,854	0	0	0	0	0	0	-113,854
Zone	1 Total/Ave.	2,123	-113,854	0	0	0	0	0	0	-113,854
Zone	1 Block	2,123	-113,854	0	0	0	0	0	0	-113,854
System	1 Total/Ave.	2,123	-113,854	0	0	0	0	0	0	-113,854
System	1 Block	2,123	-113,854	0	0	0	0	0	0	-113,854
2	1ST FL FC	0	0	0	0	0	0	0	0	0
Zone	2 Total/Ave.	0	0	0	0	0	0	0	0	0
Zone	2 Block	0	0	0	0	0	0	0	0	0
System	2 Total/Ave.	0	0	0	0	0	0	0	0	0
System	2 Block	0	0	0	0	0	0	0	0	0
3	2ND FL AHU	1,130	-60,631	0	0	0	0	0	0	-60,631
Zone	3 Total/Ave.	1,130	-60,631	0	0	0	0	0	0	-60,631
Zone	3 Block	1,130	-60,631	0	0	0	0	0	0	-60,631
System	3 Total/Ave.	1,130	-60,631	0	0	0	0	0	0	-60,631
System	3 Block	1,130	-60,631	0	0	0	0	0	0	-60,631
4	2ND FL FC	0	0	0	0	0	0	0	0	0
Zone	4 Total/Ave.	0	0	0	0	0	0	0	0	0
Zone	4 Block	0	0	0	0	0	0	0	0	0
System	4 Total/Ave.	0	0	0	0	0	0	0	0	0
System	4 Block	0	0	0	0	0	0	0	0	0
5	3RD FL FC	0	0	0	0	0	0	0	0	0
Zone	5 Total/Ave.	0	0	0	0	0	0	0	0	0
Zone	5 Block	0	0	0	0	0	0	0	0	0
System	5 Total/Ave.	0	0	0	0	0	0	0	0	0
System	5 Block	0	0	0	0	0	0	0	0	0
6	4TH FL AHU	2,445	-131,118	0	0	0	0	0	0	-131,118
Zone	6 Total/Ave.	2,445	-131,118	0	0	0	0	0	0	-131,118
Zone	6 Block	2,445	-131,118	0	0	0	0	0	0	-131,118
System	6 Total/Ave.	2,445	-131,118	0	0	0	0	0	0	-131,118
System	6 Block	2,445	-131,118	0	0	0	0	0	0	-131,118

MAIN SYSTEM HEATING - ALTERNATIVE 1
BLDG G101, BASELINE

----- P E A K H E A T I N G L O A D S -----
(Main System)

Room Number	Description	Floor Area (Sq Ft)	Space					Coil					Coil Air Flow (Cfm)	Coil Sens. Load (Btuh)
			Peak Time Mo/Hr	OA Cond. DB/WB (F)	Rm Dry Bltb (F)	Supp. Dry Bulb (F)	Space Air Flow (Cfm)	Space Sens. Load (Btuh)	Peak Time Mo/Hr	OA Cond. DB/WB (F)	Rm Dry Bltb (F)	Supp. Dry Bulb (F)		
1	1ST FL AHU	20,697	13/ 1	22 18	72	79.1	21,228	-161,912	13/ 1	22 18	72	79.1	21,228	-238,028
Zone	1 Total/Ave.	20,697		22 18	72	79.1	21,228	-161,912		22 18	72	79.1	21,228	-238
Zone	1 Block	20,697	13/ 1	22 18	72	79.1	21,228	-161,912	13/ 1	22 18	72	79.1	21,228	-238
System	1 Total/Ave.	20,697		22 18	72	79.1	21,228	-161,912		22 18	72	79.1	21,228	-238
System	1 Block	20,697	13/ 1	22 18	72	79.1	21,228	-161,912	13/ 1	22 18	72	79.1	21,228	-238,028
2	1ST FL FC	10,260	13/ 1	22 18	72	89.4	11,285	-210,129	13/ 1	22 18	72	89.4	11,285	-207,119
Zone	2 Total/Ave.	10,260		22 18	72	89.4	11,285	-210,129		22 18	72	89.4	11,285	-207,119
Zone	2 Block	10,260	13/ 1	22 18	72	89.4	11,285	-210,129	13/ 1	22 18	72	89.4	11,285	-207,119
System	2 Total/Ave.	10,260		22 18	72	89.4	11,285	-210,129		22 18	72	89.4	11,285	-207,119
System	2 Block	10,260	13/ 1	22 18	72	89.4	11,285	-210,129	13/ 1	22 18	72	89.4	11,285	-207,119
3	2ND FL AHU	10,435	13/ 1	22 18	72	75.5	11,305	-41,928	13/ 1	22 18	72	75.5	11,305	-82,461
Zone	3 Total/Ave.	10,435		22 18	72	75.5	11,305	-41,928		22 18	72	75.5	11,305	-82,461
Zone	3 Block	10,435	13/ 1	22 18	72	75.5	11,305	-41,928	13/ 1	22 18	72	75.5	11,305	-82,461
System	3 Total/Ave.	10,435		22 18	72	75.5	11,305	-41,928		22 18	72	75.5	11,305	-82,461
System	3 Block	10,435	13/ 1	22 18	72	75.5	11,305	-41,928	13/ 1	22 18	72	75.5	11,305	-82,461
4	2ND FL FC	20,580	13/ 1	22 18	72	84.7	29,327	-400,973	13/ 1	22 18	72	84.7	29,327	-393,153
Zone	4 Total/Ave.	20,580		22 18	72	84.7	29,327	-400,973		22 18	72	84.7	29,327	-393,153
Zone	4 Block	20,580	13/ 1	22 18	72	84.7	29,327	-400,973	13/ 1	22 18	72	84.7	29,327	-393,153
System	4 Total/Ave.	20,580		22 18	72	84.7	29,327	-400,973		22 18	72	84.7	29,327	-393,153
System	4 Block	20,580	13/ 1	22 18	72	84.7	29,327	-400,973	13/ 1	22 18	72	84.7	29,327	-393,153
5	3RD FL FC	29,105	13/ 1	22 18	72	83.8	44,831	-565,680	13/ 1	22 18	72	83.8	44,831	-553,725
Zone	5 Total/Ave.	29,105		22 18	72	83.8	44,831	-565,680		22 18	72	83.8	44,831	-553,725
Zone	5 Block	29,105	13/ 1	22 18	72	83.8	44,831	-565,680	13/ 1	22 18	72	83.8	44,831	-553,725
System	5 Total/Ave.	29,105		22 18	72	83.8	44,831	-565,680		22 18	72	83.8	44,831	-553,725
System	5 Block	29,105	13/ 1	22 18	72	83.8	44,831	-565,680	13/ 1	22 18	72	83.8	44,831	-553,725
6	4TH FL AHU	29,105	13/ 1	22 18	72	78.2	24,447	-161,781	13/ 1	22 18	72	78.2	24,447	-249,438
Zone	6 Total/Ave.	29,105		22 18	72	78.2	24,447	-161,781		22 18	72	78.2	24,447	-249,438
Zone	6 Block	29,105	13/ 1	22 18	72	78.2	24,447	-161,781	13/ 1	22 18	72	78.2	24,447	-249,438
System	6 Total/Ave.	29,105		22 18	72	78.2	24,447	-161,781		22 18	72	78.2	24,447	-249,438
System	6 Block	29,105	13/ 1	22 18	72	78.2	24,447	-161,781	13/ 1	22 18	72	78.2	24,447	-249,438

COOLING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1
BLDG G101, BASELINE

----- AIRFLOW HEAT GAIN AND LOSS -----
(At time of Coil Peak)

Room Number	Description	Duct Heat Pickup (Btuh)	Supply Fan Heat (Btuh)	Return Fan Heat (Btuh)	System Exhaust Heat Loss (Btuh)	Cooling							System Return Airflow (Cfm)
						Total	System Exhaust	Room Exhaust	Ducted	Plenum	Run Around	Corridor	
1	1ST FL AHU	0	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
Zone	1 Total/Ave.	0	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
Zone	1 Block	0	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
System	1 Total/Ave.	0	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
System	1 Block	0	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
2	1ST FL FC	0	3,009	1,003	0	4,012	0	0	0	0	0	0	11,285
Zone	2 Total/Ave.	0	3,009	1,003	0	4,012	0	0	0	0	0	0	11,285
Zone	2 Block	0	3,009	1,003	0	4,012	0	0	0	0	0	0	11,285
System	2 Total/Ave.	0	3,009	1,003	0	4,012	0	0	0	0	0	0	11,285
System	2 Block	0	3,009	1,003	0	4,012	0	0	0	0	0	0	11,285
3	2ND FL AHU	0	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
Zone	3 Total/Ave.	0	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
Zone	3 Block	0	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
System	3 Total/Ave.	0	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
System	3 Block	0	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
4	2ND FL FC	0	7,820	2,607	0	10,427	0	0	0	0	0	0	29,327
Zone	4 Total/Ave.	0	7,820	2,607	0	10,427	0	0	0	0	0	0	29,327
Zone	4 Block	0	7,820	2,607	0	10,427	0	0	0	0	0	0	29,327
System	4 Total/Ave.	0	7,820	2,607	0	10,427	0	0	0	0	0	0	29,327
System	4 Block	0	7,820	2,607	0	10,427	0	0	0	0	0	0	29,327
5	3RD FL FC	0	11,955	3,985	0	15,940	0	0	0	0	0	0	44,831
Zone	5 Total/Ave.	0	11,955	3,985	0	15,940	0	0	0	0	0	0	44,831
Zone	5 Block	0	11,955	3,985	0	15,940	0	0	0	0	0	0	44,831
System	5 Total/Ave.	0	11,955	3,985	0	15,940	0	0	0	0	0	0	44,831
System	5 Block	0	11,955	3,985	0	15,940	0	0	0	0	0	0	44,831
6	4TH FL AHU	0	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
Zone	6 Total/Ave.	0	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
Zone	6 Block	0	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
System	6 Total/Ave.	0	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
System	6 Block	0	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447

HEATING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1
BLDG G101, BASELINE

----- A I R F L O W H E A T G A I N A N D L O S S -----
(At time of Coil Peak)

Room Number	Description	Supply Fan Heat (Btuh)	Return Fan Heat (Btuh)	System Exhaust Heat Loss (Btuh)	Total (Btuh)	Heating		Ducted Airflow (Cfm)	Plenum Airflow (Cfm)	Run Around Airflow (Cfm)	Corridor Airflow (Cfm)	System Return Airflow (Cfm)
						System Exhaust Airflow (Cfm)	Room Exhaust Airflow (Cfm)					
1	1ST FL AHU	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
Zone	1 Total/Ave.	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
Zone	1 Block	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
System	1 Total/Ave.	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
System	1 Block	37,739	0	0	37,739	2,123	0	21,228	0	0	0	21,228
2	1ST FL FC	3,009	0	0	3,009	0	0	0	0	0	0	11,285
Zone	2 Total/Ave.	3,009	0	0	3,009	0	0	0	0	0	0	11,285
Zone	2 Block	3,009	0	0	3,009	0	0	0	0	0	0	11,285
System	2 Total/Ave.	3,009	0	0	3,009	0	0	0	0	0	0	11,285
System	2 Block	3,009	0	0	3,009	0	0	0	0	0	0	11,285
3	2ND FL AHU	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
Zone	3 Total/Ave.	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
Zone	3 Block	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
System	3 Total/Ave.	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
System	3 Block	20,097	0	0	20,097	1,130	0	11,305	0	0	0	11,305
4	2ND FL FC	7,820	0	0	7,820	0	0	0	0	0	0	29,327
Zone	4 Total/Ave.	7,820	0	0	7,820	0	0	0	0	0	0	29,327
Zone	4 Block	7,820	0	0	7,820	0	0	0	0	0	0	29,327
System	4 Total/Ave.	7,820	0	0	7,820	0	0	0	0	0	0	29,327
System	4 Block	7,820	0	0	7,820	0	0	0	0	0	0	29,327
5	3RD FL FC	11,955	0	0	11,955	0	0	0	0	0	0	44,831
Zone	5 Total/Ave.	11,955	0	0	11,955	0	0	0	0	0	0	44,831
Zone	5 Block	11,955	0	0	11,955	0	0	0	0	0	0	44,831
System	5 Total/Ave.	11,955	0	0	11,955	0	0	0	0	0	0	44,831
System	5 Block	11,955	0	0	11,955	0	0	0	0	0	0	44,831
6	4TH FL AHU	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
Zone	6 Total/Ave.	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
Zone	6 Block	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
System	6 Total/Ave.	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447
System	6 Block	43,461	0	0	43,461	2,445	0	24,447	0	0	0	24,447

ROOM PSYCHROMETRICS - ALTERNATIVE 1
 BLDG G101, BASELINE

----- P S Y C H R O M E T R I C S T A T E P O I N T S -----

Room 2

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	76.0	63.2	50.0	69.8	29.2	
Main System						
Return Air Heat Pickup						-0.1
Return Fan						0.1
Return Air	76.0	63.2	50.0	69.8	29.2	
Outdoor Air	92.3	74.4	44.2	105.0	38.7	
Return/Outdoor Air Mix	76.0	63.2	50.0	69.8	29.2	
Blow through Fan						0.1
Entering Coil	76.1	63.2	49.9	69.8	29.2	
Leaving Coil	58.6	56.0	85.6	65.5	24.3	
Draw Through Fan						0.0
Duct Frictional Heat						0.2
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	58.8	56.1	85.0	65.5	24.3	
Supply Air	58.8	56.1	85.0	65.5	24.3	
Percent Outside Air		0.00	(%)			
Sensible Heat Ratio (SHR)		0.851				
Percent Supply Air Bypassing Coil		0.00	(%)			
Coil Airflow		11,285	(Cfm)			

Trane Air Conditioning Economics
 By: Trane Customer Direct Service Network

V 600
 PAGE

ROOM PSYCHROMETRICS - ALTERNATIVE 1
 BLDG G101, BASELINE

----- P S Y C H R O M E T R I C S T A T E P O I N T S -----

Room 4

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	76.0	63.2	50.0	69.8	29.2	
Main System						
Return Air Heat Pickup						-0.1
Return Fan						0.1
Return Air	76.0	63.2	50.0	69.8	29.2	
Outdoor Air	92.3	74.4	44.2	105.0	38.7	
Return/Outdoor Air Mix	76.0	63.2	50.0	69.8	29.2	
Blow through Fan						0.1
Entering Coil	76.1	63.2	49.9	69.8	29.2	
Leaving Coil	60.3	57.1	82.9	67.5	25.0	
Draw Through Fan						0.0
Duct Frictional Heat						0.2
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	60.5	57.2	82.3	67.5	25.0	
Supply Air	60.5	57.2	82.3	67.5	25.0	
Percent Outside Air		0.00	(%)			
Sensible Heat Ratio (SHR)		0.898				
Percent Supply Air Bypassing Coil		0.00	(%)			
Coil Airflow		29,327	(Cfm)			

ROOM PSYCHROMETRICS - ALTERNATIVE 1
BLDG G101, BASELINE

----- P S Y C H R O M E T R I C S T A T E P O I N T S -----

Room 5

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	76.0	63.2	50.0	69.8	29.2	
Main System						
Return Air Heat Pickup						-0.1
Return Fan						0.1
Return Air	76.0	63.2	50.0	69.8	29.2	
Outdoor Air	92.3	74.4	44.2	105.0	38.7	
Return/Outdoor Air Mix	76.0	63.2	50.0	69.8	29.2	
Blow through Fan						0.1
Entering Coil	76.1	63.2	49.9	69.8	29.2	
Leaving Coil	60.1	57.0	83.3	67.2	24.9	
Draw Through Fan						0.0
Duct Frictional Heat						0.2
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	60.3	57.0	82.7	67.2	24.9	
Supply Air	60.3	57.0	82.7	67.2	24.9	
Percent Outside Air		0.00	(%)			
Sensible Heat Ratio (SHR)		0.889				
Percent Supply Air Bypassing Coil		0.00	(%)			
Coil Airflow		44,831	(Cfm)			

ZONE PSYCHROMETRICS - ALTERNATIVE 1
BLDG G101, BASELINE

----- PSYCHROMETRIC STATE POINTS -----

Zone 1

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	76.0	63.2	50.0	69.8	29.2	
Main System						
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	76.0	63.2	50.0	69.8	29.2	
Outdoor Air	92.3	74.4	44.2	105.0	38.7	
Return/Outdoor Air Mix	77.6	64.5	49.7	73.3	30.1	
Blow through Fan						0.0
Entering Coil	77.6	64.5	49.7	73.3	30.1	
Leaving Coil	60.8	57.9	84.5	70.0	25.5	
Draw Through Fan						0.7
Duct Frictional Heat						0.9
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	62.5	58.5	79.7	70.0	25.9	
Supply Air	62.5	58.5	79.7	70.0	25.9	
Percent Outside Air	10.00		(%)			
Sensible Heat Ratio (SHR)	0.959					
Percent Supply Air Bypassing Coil	0.00		(%)			
Coil Airflow	21,228		(Cfm)			

ZONE PSYCHROMETRICS - ALTERNATIVE 1
BLDG G101, BASELINE

----- P S Y C H R O M E T R I C S T A T E P O I N T S -----

Zone 3

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	76.0	63.2	50.0	69.8	29.2	
Main System						
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	76.0	63.2	50.0	69.8	29.2	
Outdoor Air	92.3	74.4	44.2	105.0	38.7	
Return/Outdoor Air Mix	77.6	64.5	49.7	73.3	30.1	
Blow through Fan						0.0
Entering Coil	77.6	64.5	49.7	73.3	30.1	
Leaving Coil	60.6	57.7	84.9	69.7	25.4	
Draw Through Fan						0.7
Duct Frictional Heat						0.9
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	62.2	58.3	80.0	69.7	25.8	
Supply Air	62.2	58.3	80.0	69.7	25.8	
Percent Outside Air		10.00	(%)			
Sensible Heat Ratio (SHR)		0.949				
Percent Supply Air Bypassing Coil		0.00	(%)			
Coil Airflow		11,305	(Cfm)			

Trane Air Conditioning Economics
 By: Trane Customer Direct Service Network

V 600
 PAGE

ZONE PSYCHROMETRICS - ALTERNATIVE 1
 BLDG G101, BASELINE

----- P S Y C H R O M E T R I C S T A T E P O I N T S -----

Zone 6

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	76.0	63.2	50.0	69.8	29.2	
Main System						
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	76.0	63.2	50.0	69.8	29.2	
Outdoor Air	92.0	74.4	44.6	105.0	38.6	
Return/Outdoor Air Mix	77.6	64.5	49.8	73.3	30.1	
Blow through Fan						0.0
Entering Coil	77.6	64.5	49.8	73.3	30.1	
Leaving Coil	60.8	57.9	84.5	70.0	25.5	
Draw Through Fan						0.7
Duct Frictional Heat						0.9
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	62.5	58.5	79.7	70.0	25.9	
Supply Air	62.5	58.5	79.7	70.0	25.9	
Percent Outside Air	10.00	(%)				
Sensible Heat Ratio (SHR)	0.958					
Percent Supply Air Bypassing Coil	0.00	(%)				
Coil Airflow	24,447	(Cfm)				

BUILDING U-VALUES - ALTERNATIVE 1
BLDG G101, BASELINE

----- B U I L D I N G U - V A L U E S -----

Room Number	Description	Part.	ExFlr	Room U-Values (Btu/hr/sqft/F)							Room Mass (lb/ sqft)	Room Capac. (Btu/ sqft/F)
				Summr Skylt	Wintr Skylt	Roof	Summr Windo	Wintr Windo	Wall	Cell.		
1	1ST FL AHU	0.000	0.620	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.6	5.11
Zone	1 Total/Ave.	0.000	0.620	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.6	5.11
System	1 Total/Ave.	0.000	0.620	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.6	5.11
2	1ST FL FC	0.000	0.620	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.5	5.10
Zone	2 Total/Ave.	0.000	0.620	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.5	5.10
System	2 Total/Ave.	0.000	0.620	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.5	5.10
3	2ND FL AHU	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	24.0	4.80
Zone	3 Total/Ave.	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	24.0	4.80
System	3 Total/Ave.	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	24.0	4.80
4	2ND FL FC	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.3	5.06
Zone	4 Total/Ave.	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.3	5.06
System	4 Total/Ave.	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	25.3	5.06
5	3RD FL FC	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	24.0	4.80
Zone	5 Total/Ave.	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	24.0	4.80
System	5 Total/Ave.	0.000	0.000	0.000	0.000	0.000	1.100	1.211	0.250	0.317	24.0	4.80
6	4TH FL AHU	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.250	0.317	36.6	9.46
Zone	6 Total/Ave.	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.250	0.317	36.6	9.46
System	6 Total/Ave.	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.250	0.317	36.6	9.46
Building		0.000	0.620	0.000	0.000	0.030	1.100	1.211	0.250	0.317	27.7	6.05

BUILDING AREAS - ALTERNATIVE 1
BLDG G101, BASELINE

----- B U I L D I N G A R E A S -----

Room Number	Description	Number of Duplicate		Floor Area/Dupl Room (sqft)	Total Floor Area (sqft)	Partition Area (sqft)	Exposed Floor Area (sqft)	Skylight Area (sqft)	Sk1 /Rf (%)	Net Roof Area (sqft)	Window Area (sqft)	Win /Wl (%)	Net Wall Area (sqft)
		Flr	Rm										
1	1ST FL AHU	1	1	20,697	20,697	0	700	0	0	0	1,064	15	6,141
Zone	1 Total/Ave.				20,697	0	700	0	0	0	1,064	15	6,141
System	1 Total/Ave.				20,697	0	700	0	0	0	1,064	15	6,141
2	1ST FL FC	1	1	10,260	10,260	0	387	0	0	0	840	22	3,025
Zone	2 Total/Ave.				10,260	0	387	0	0	0	840	22	3,025
System	2 Total/Ave.				10,260	0	387	0	0	0	840	22	3,025
3	2ND FL AHU	1	1	10,435	10,435	0	0	0	0	0	140	5	2,700
Zone	3 Total/Ave.				10,435	0	0	0	0	0	140	5	2,700
System	3 Total/Ave.				10,435	0	0	0	0	0	140	5	2,700
4	2ND FL FC	1	1	20,580	20,580	0	0	0	0	0	1,764	23	5,966
Zone	4 Total/Ave.				20,580	0	0	0	0	0	1,764	23	5,966
System	4 Total/Ave.				20,580	0	0	0	0	0	1,764	23	5,966
5	3RD FL FC	1	1	29,105	29,105	0	0	0	0	0	2,660	26	7,510
Zone	5 Total/Ave.				29,105	0	0	0	0	0	2,660	26	7,510
System	5 Total/Ave.				29,105	0	0	0	0	0	2,660	26	7,510
6	4TH FL AHU	1	1	29,105	29,105	0	0	0	0	29,105	0	0	10,170
Zone	6 Total/Ave.				29,105	0	0	0	0	29,105	0	0	10,170
System	6 Total/Ave.				29,105	0	0	0	0	29,105	0	0	10,170
Building					120,182	0	1,087	0	0	29,105	6,468	15	35,512

ASHRAE 90 ANALYSIS - ALTERNATIVE 1
BLDG G101, BASELINE

----- A S H R A E 9 0 A N A L Y S I S -----

Overall Roof U-Value = 0.030 (Btu/Hr/Sq Ft/F)
Overall Wall U-Value = 0.381 (Btu/Hr/Sq Ft/F)
Overall Building U-Value = 0.237 (Btu/Hr/Sq Ft/F)

Roof Overall Thermal Transfer Value (OTTVr) = 1.15 (Btu/Hr/Sq Ft)
Wall Overall Thermal Transfer Value (OTTVw) = 22.75 (Btu/Hr/Sq Ft)

~R

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG G101, BASELINE

Main System 1 SZ SINGLE ZONE

Percent Design Load	Cooling Load			Heating Load			Cooling Airflow			Heating Airflow		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	1.8	5	183	-11,901	5	48	1,061.4	0	0	0.0	0	0
5 - 10	3.6	11	385	-23,803	4	37	2,122.8	0	0	0.0	0	0
10 - 15	5.4	10	367	-35,704	4	41	3,184.2	0	0	0.0	0	0
15 - 20	7.2	9	345	-47,606	8	77	4,245.6	0	0	0.0	0	0
20 - 25	9.0	10	359	-59,507	9	91	5,307.0	0	0	0.0	0	0
25 - 30	10.7	7	263	-71,408	12	115	6,368.4	0	0	0.0	0	0
30 - 35	12.5	10	366	-83,310	11	114	7,429.8	0	0	0.0	0	0
35 - 40	14.3	3	114	-95,211	7	65	8,491.2	0	0	0.0	0	0
40 - 45	16.1	3	124	-107,112	8	79	9,552.6	0	0	0.0	0	0
45 - 50	17.9	3	108	-119,014	12	118	10,614.0	0	0	0.0	0	0
50 - 55	19.7	4	149	-130,915	3	34	11,675.4	0	0	0.0	0	0
55 - 60	21.5	3	109	-142,817	14	138	12,736.8	0	0	0.0	0	0
60 - 65	23.3	3	102	-154,718	4	40	13,798.2	0	0	0.0	0	0
65 - 70	25.1	6	217	-166,619	0	0	14,859.6	0	0	0.0	0	0
70 - 75	26.9	5	193	-178,521	0	0	15,921.0	0	0	0.0	0	0
75 - 80	28.6	2	84	-190,422	0	0	16,982.4	0	0	0.0	0	0
80 - 85	30.4	2	65	-202,324	0	0	18,043.8	0	0	0.0	0	0
85 - 90	32.2	4	130	-214,225	0	0	19,105.2	0	0	0.0	0	0
90 - 95	34.0	0	0	-226,126	0	0	20,166.6	0	0	0.0	0	0
95 - 100	35.8	0	0	-238,028	0	0	21,228.0	100	8,760	0.0	0	0
Hours Off	0.0	0	5,097	0	0	7,763	0.0	0	0	0.0	0	8,760

Main System 2 FC FAN COIL

Percent Design Load	Cooling Load			Heating Load			Cooling Airflow			Heating Airflow		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	1.1	10	264	-10,356	9	162	564.3	0	0	0.0	0	0
5 - 10	2.1	15	394	-20,712	4	73	1,128.5	0	0	0.0	0	0
10 - 15	3.2	9	225	-31,068	10	166	1,692.8	0	0	0.0	0	0
15 - 20	4.3	13	351	-41,424	10	177	2,257.0	0	0	0.0	0	0
20 - 25	5.4	6	156	-51,780	10	182	2,821.3	0	0	0.0	0	0
25 - 30	6.4	2	54	-62,136	10	173	3,385.5	0	0	0.0	0	0
30 - 35	7.5	9	232	-72,492	18	318	3,949.8	0	0	0.0	0	0
35 - 40	8.6	5	131	-82,848	21	372	4,514.1	0	0	0.0	0	0
40 - 45	9.7	5	124	-93,204	7	115	5,078.3	0	0	0.0	0	0
45 - 50	10.7	3	91	-103,560	0	0	5,642.6	0	0	0.0	0	0
50 - 55	11.8	6	171	-113,916	0	0	6,206.8	0	0	0.0	0	0
55 - 60	12.9	10	252	-124,272	0	0	6,771.1	0	0	0.0	0	0
60 - 65	14.0	0	0	-134,628	0	0	7,335.4	0	0	0.0	0	0
65 - 70	15.0	0	0	-144,984	0	0	7,899.6	0	0	0.0	0	0
70 - 75	16.1	6	150	-155,340	0	0	8,463.9	0	0	0.0	0	0
75 - 80	17.2	2	45	-165,696	0	0	9,028.1	0	0	0.0	0	0
80 - 85	18.3	0	0	-176,052	0	0	9,592.4	0	0	0.0	0	0
85 - 90	19.3	0	0	-186,408	0	0	10,156.6	0	0	0.0	0	0
90 - 95	20.4	0	0	-196,764	0	0	10,720.9	0	0	0.0	0	0
95 - 100	21.5	0	0	-207,119	0	0	11,285.2	100	8,760	0.0	0	0
Hours Off	0.0	0	6,120	0	0	7,022	0.0	0	0	0.0	0	8,760

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG G101, BASELINE

Main System 3 SZ SINGLE ZONE

Percent Design Load	Cooling Load			Heating Load			Cooling Airflow			Heating Airflow		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	1.0	8	325	-4,123	5	26	565.2	0	0	0.0	0	0
5 - 10	2.0	8	331	-8,246	2	10	1,130.5	0	0	0.0	0	0
10 - 15	3.0	15	609	-12,369	8	42	1,695.7	0	0	0.0	0	0
15 - 20	4.0	9	372	-16,492	6	31	2,260.9	0	0	0.0	0	0
20 - 25	5.0	10	398	-20,615	13	69	2,826.1	0	0	0.0	0	0
25 - 30	6.0	11	423	-24,738	7	36	3,391.4	0	0	0.0	0	0
30 - 35	7.0	3	138	-28,862	7	36	3,956.6	0	0	0.0	0	0
35 - 40	8.0	1	22	-32,985	8	44	4,521.8	0	0	0.0	0	0
40 - 45	9.0	1	42	-37,108	9	47	5,087.0	0	0	0.0	0	0
45 - 50	10.0	2	66	-41,231	10	56	5,652.3	0	0	0.0	0	0
50 - 55	11.0	3	131	-45,354	7	37	6,217.5	0	0	0.0	0	0
55 - 60	12.0	1	42	-49,477	11	62	6,782.7	0	0	0.0	0	0
60 - 65	13.0	4	174	-53,600	8	46	7,348.0	0	0	0.0	0	0
65 - 70	14.0	4	167	-57,723	0	0	7,913.2	0	0	0.0	0	0
70 - 75	15.0	3	107	-61,846	0	0	8,478.4	0	0	0.0	0	0
75 - 80	16.0	6	240	-65,969	0	0	9,043.6	0	0	0.0	0	0
80 - 85	17.0	4	147	-70,092	0	0	9,608.9	0	0	0.0	0	0
85 - 90	18.0	2	65	-74,215	0	0	10,174.1	0	0	0.0	0	0
90 - 95	19.0	4	150	-78,338	0	0	10,739.3	0	0	0.0	0	0
95 - 100	20.0	0	0	-82,461	0	0	11,304.5	100	8,760	0.0	0	0
Hours Off	0.0	0	4,811	0	0	8,218	0.0	0	0	0.0	0	8,760

Main System 4 FC FAN COIL

Percent Design Load	Cooling Load			Heating Load			Cooling Airflow			Heating Airflow		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	2.4	11	311	-19,658	5	79	1,466.3	0	0	0.0	0	0
5 - 10	4.9	15	410	-39,315	4	60	2,932.7	0	0	0.0	0	0
10 - 15	7.3	12	342	-58,973	5	68	4,399.0	0	0	0.0	0	0
15 - 20	9.8	11	298	-78,631	11	165	5,865.3	0	0	0.0	0	0
20 - 25	12.2	3	83	-98,288	12	170	7,331.7	0	0	0.0	0	0
25 - 30	14.7	5	143	-117,946	13	192	8,798.0	0	0	0.0	0	0
30 - 35	17.1	5	141	-137,603	7	101	10,264.3	0	0	0.0	0	0
35 - 40	19.6	6	165	-157,261	28	402	11,730.7	0	0	0.0	0	0
40 - 45	22.0	5	129	-176,919	14	205	13,197.0	0	0	0.0	0	0
45 - 50	24.5	2	47	-196,576	0	0	14,663.3	0	0	0.0	0	0
50 - 55	26.9	7	195	-216,234	0	0	16,129.7	0	0	0.0	0	0
55 - 60	29.3	6	172	-235,892	0	0	17,596.0	0	0	0.0	0	0
60 - 65	31.8	5	147	-255,549	0	0	19,062.3	0	0	0.0	0	0
65 - 70	34.2	0	0	-275,207	0	0	20,528.7	0	0	0.0	0	0
70 - 75	36.7	2	43	-294,865	0	0	21,995.0	0	0	0.0	0	0
75 - 80	39.1	5	152	-314,522	0	0	23,461.3	0	0	0.0	0	0
80 - 85	41.6	0	0	-334,180	0	0	24,927.7	0	0	0.0	0	0
85 - 90	44.0	0	0	-353,837	0	0	26,394.0	0	0	0.0	0	0
90 - 95	46.5	0	0	-373,495	0	0	27,860.3	0	0	0.0	0	0
95 - 100	48.9	0	0	-393,153	0	0	29,326.6	100	8,760	0.0	0	0
Hours Off	0.0	0	5,982	0	0	7,318	0.0	0	0	0.0	0	8,760

SYSTEM LOAD PROFILE - ALTERNATIVE 1
BLDG G101, BASELINE

Main System 5 FC FAN COIL

Percent Design Load	Cooling Load			Heating Load			Cooling Airflow			Heating Airflow		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	3.8	2	93	-27,686	50	3	2,241.5	0	0	0.0	0	0
5 - 10	7.6	4	173	-55,372	0	0	4,483.1	0	0	0.0	0	0
10 - 15	11.4	9	395	-83,059	50	3	6,724.6	0	0	0.0	0	0
15 - 20	15.2	15	664	-110,745	0	0	8,966.2	0	0	0.0	0	0
20 - 25	18.9	10	459	-138,431	0	0	11,207.7	0	0	0.0	0	0
25 - 30	22.7	13	563	-166,117	0	0	13,449.2	0	0	0.0	0	0
30 - 35	26.5	9	410	-193,804	0	0	15,690.8	0	0	0.0	0	0
35 - 40	30.3	10	432	-221,490	0	0	17,932.3	0	0	0.0	0	0
40 - 45	34.1	6	245	-249,176	0	0	20,173.9	0	0	0.0	0	0
45 - 50	37.9	3	147	-276,862	0	0	22,415.4	0	0	0.0	0	0
50 - 55	41.7	4	173	-304,549	0	0	24,657.0	0	0	0.0	0	0
55 - 60	45.5	5	213	-332,235	0	0	26,898.5	0	0	0.0	0	0
60 - 65	49.3	5	234	-359,921	0	0	29,140.0	0	0	0.0	0	0
65 - 70	53.0	0	20	-387,607	0	0	31,381.6	0	0	0.0	0	0
70 - 75	56.8	0	0	-415,294	0	0	33,623.1	0	0	0.0	0	0
75 - 80	60.6	3	150	-442,980	0	0	35,864.7	0	0	0.0	0	0
80 - 85	64.4	1	45	-470,666	0	0	38,106.2	0	0	0.0	0	0
85 - 90	68.2	0	0	-498,352	0	0	40,347.8	0	0	0.0	0	0
90 - 95	72.0	0	0	-526,039	0	0	42,589.3	0	0	0.0	0	0
95 - 100	75.8	0	0	-553,725	0	0	44,830.8	100	8,760	0.0	0	0
Hours Off	0.0	0	4,344	0	0	8,754	0.0	0	0	0.0	0	8,760

Main System 6 SZ SINGLE ZONE

Percent Design Load	Cooling Load			Heating Load			Cooling Airflow			Heating Airflow		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	2.1	7	269	-12,472	4	37	1,222.3	0	0	0.0	0	0
5 - 10	4.1	12	442	-24,944	3	29	2,444.7	0	0	0.0	0	0
10 - 15	6.2	6	235	-37,416	9	86	3,667.0	0	0	0.0	0	0
15 - 20	8.2	7	257	-49,888	8	69	4,889.3	0	0	0.0	0	0
20 - 25	10.3	8	290	-62,360	5	47	6,111.7	0	0	0.0	0	0
25 - 30	12.3	7	261	-74,831	5	45	7,334.0	0	0	0.0	0	0
30 - 35	14.4	6	229	-87,303	7	63	8,556.4	0	0	0.0	0	0
35 - 40	16.5	4	141	-99,775	8	75	9,778.7	0	0	0.0	0	0
40 - 45	18.5	10	375	-112,247	7	68	11,001.0	0	0	0.0	0	0
45 - 50	20.6	7	241	-124,719	7	62	12,223.4	0	0	0.0	0	0
50 - 55	22.6	2	60	-137,191	9	82	13,445.7	0	0	0.0	0	0
55 - 60	24.7	3	112	-149,663	6	59	14,668.1	0	0	0.0	0	0
60 - 65	26.8	5	172	-162,135	7	67	15,890.4	0	0	0.0	0	0
65 - 70	28.8	5	172	-174,607	13	116	17,112.7	0	0	0.0	0	0
70 - 75	30.9	2	82	-187,079	1	9	18,335.1	0	0	0.0	0	0
75 - 80	32.9	3	108	-199,550	0	0	19,557.4	0	0	0.0	0	0
80 - 85	35.0	2	65	-212,022	0	0	20,779.7	0	0	0.0	0	0
85 - 90	37.0	3	107	-224,494	0	0	22,002.1	0	0	0.0	0	0
90 - 95	39.1	0	0	-236,966	0	0	23,224.4	0	0	0.0	0	0
95 - 100	41.2	0	0	-249,438	0	0	24,446.7	100	8,760	0.0	0	0
Hours Off	0.0	0	5,142	0	0	7,846	0.0	0	0	0.0	0	8,760

SYSTEM TOTALS LOAD PROFILE - ALTERNATIVE 1
BLDG G101, BASELINE

----- SYSTEM LOAD PROFILE -----

System Totals

Percent Design Load	---- Cooling Load ----			----- Heating Load -----			---- Cooling Airflow ----			---- Heating Airflow ----		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	12.2	13	564	-86,196	25	444	7,121.1	0	0	0.0	0	0
5 - 10	24.3	16	725	-172,392	11	188	14,242.2	0	0	0.0	0	0
10 - 15	36.5	12	540	-258,589	24	422	21,363.3	0	0	0.0	0	0
15 - 20	48.6	9	405	-344,785	11	195	28,484.4	0	0	0.0	0	0
20 - 25	60.8	6	280	-430,981	7	122	35,605.5	0	0	0.0	0	0
25 - 30	72.9	8	362	-517,177	10	173	42,726.6	0	0	0.0	0	0
30 - 35	85.1	6	261	-603,373	9	162	49,847.7	0	0	0.0	0	0
35 - 40	97.3	3	115	-689,570	2	33	56,968.8	0	0	0.0	0	0
40 - 45	109.4	4	182	-775,766	0	3	64,089.9	0	0	0.0	0	0
45 - 50	121.6	4	184	-861,962	0	0	71,211.0	0	0	0.0	0	0
50 - 55	133.7	2	89	-948,158	0	0	78,332.1	0	0	0.0	0	0
55 - 60	145.9	3	153	-1,034,355	0	0	85,453.2	0	0	0.0	0	0
60 - 65	158.0	4	171	-1,120,551	0	0	92,574.3	0	0	0.0	0	0
65 - 70	170.2	4	190	-1,206,747	0	0	99,695.4	0	0	0.0	0	0
70 - 75	182.4	0	0	-1,292,943	0	0	106,816.4	0	0	0.0	0	0
75 - 80	194.5	2	88	-1,379,140	0	0	113,937.5	0	0	0.0	0	0
80 - 85	206.7	2	107	-1,465,336	0	0	121,058.6	0	0	0.0	0	0
85 - 90	218.8	0	0	-1,551,532	0	0	128,179.7	0	0	0.0	0	0
90 - 95	231.0	0	0	-1,637,728	0	0	135,300.8	0	0	0.0	0	0
95 - 100	243.1	0	0	-1,723,924	0	0	142,421.9	100	8,760	0.0	0	0
Hours Off	0.0	0	4,344	0	0	7,018	0.0	0	0	0.0	0	8,760

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
BLDG G101, BASELINE

January		----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg Btuh	Clg Ton		Htg Btuh	Clg Ton			Htg Btuh	Clg Ton			Htg Btuh	Clg Ton			Htg Btuh	Clg Ton		
1	33.4	30.4	-608,634	0.0		-213,519	0.0			-113,350	0.0			-521,697	0.0			-521,697	0.0		
2	32.1	29.3	-654,546	0.0		-223,028	0.0			-427,242	0.0			-556,449	0.0			-556,449	0.0		
3	31.7	29.3	-695,731	0.0		-233,030	0.0			-530,660	0.0			-580,041	0.0			-580,041	0.0		
4	31.9	29.5	-720,659	0.0		-233,126	0.0			-539,311	0.0			-590,059	0.0			-590,059	0.0		
5	32.6	30.3	-740,165	0.0		-244,885	0.0			-557,165	0.0			-608,001	0.0			-608,001	0.0		
6	33.6	31.3	-742,302	0.0		-420,524	0.0			-568,386	0.0			-618,968	0.0			-618,968	0.0		
7	35.0	32.6	-728,260	0.0		-546,940	0.0			-546,996	0.0			-595,879	0.0			-595,879	0.0		
8	36.6	34.4	-26,575	0.0		-26,831	0.0			-493,545	0.0			-539,387	0.0			-26,860	0.0		
9	38.5	36.3	0	0.0		0	0.0			-451,673	0.0			-494,803	0.0			0	0.0		
10	40.4	37.7	0	0.0		0	0.0			-398,882	0.0			-437,828	0.0			0	0.0		
11	42.3	38.7	0	0.0		0	0.0			-342,287	0.0			-375,514	0.0			0	0.0		
12	44.2	39.6	0	0.0		0	0.0			-284,118	0.0			-311,537	0.0			0	0.0		
13	45.8	40.5	0	0.0		0	0.0			-232,469	0.0			-254,540	0.0			0	0.0		
14	47.2	41.1	0	0.0		0	0.0			-214,763	0.0			-232,832	0.0			0	0.0		
15	48.2	41.6	0	0.0		0	0.0			-194,672	0.0			-200,983	0.0			0	0.0		
16	48.9	41.8	0	0.0		0	0.0			-161,448	0.0			-161,452	0.0			0	0.0		
17	49.1	41.9	0	0.0		0	0.0			-211,844	0.0			-211,848	0.0			0	0.0		
18	48.7	41.9	0	0.0		0	0.0			-219,611	0.0			-219,611	0.0			0	0.0		
19	47.4	41.7	0	0.0		0	0.0			-236,445	0.0			-236,445	0.0			0	0.0		
20	45.5	40.5	0	0.0		0	0.0			-268,752	0.0			-268,752	0.0			0	0.0		
21	43.1	38.9	0	0.0		0	0.0			-330,964	0.0			-330,964	0.0			0	0.0		
22	40.4	36.7	0	0.0		0	0.0			-381,619	0.0			-381,619	0.0			0	0.0		
23	37.7	34.3	-45,557	0.0		-26,615	0.0			-435,634	0.0			-435,634	0.0			-26,615	0.0		
24	35.3	32.3	-133,899	0.0		-69,737	0.0			-492,085	0.0			-492,085	0.0			-69,737	0.0		

February		----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg Btuh	Clg Ton		Htg Btuh	Clg Ton			Htg Btuh	Clg Ton			Htg Btuh	Clg Ton			Htg Btuh	Clg Ton		
1	37.5	34.5	-195,956	0.0		-209,716	0.0			-224,337	0.0			-486,246	0.0			-486,246	0.0		
2	36.0	33.0	-338,694	0.0		-231,450	0.0			-480,799	0.0			-528,705	0.0			-528,705	0.0		
3	34.7	31.8	-512,565	0.0		-230,224	0.0			-501,287	0.0			-545,408	0.0			-545,408	0.0		
4	33.6	30.9	-540,990	0.0		-241,400	0.0			-528,579	0.0			-575,596	0.0			-575,596	0.0		
5	32.8	30.1	-557,268	0.0		-250,334	0.0			-550,931	0.0			-599,878	0.0			-599,878	0.0		
6	32.2	29.8	-560,286	0.0		-334,410	0.0			-569,823	0.0			-620,320	0.0			-639,515	0.0		
7	32.1	29.6	-544,984	0.0		-481,617	0.0			-574,551	0.0			-626,324	0.0			-699,164	0.0		
8	32.5	30.3	-4,518	0.0		-35,040	0.0			-503,000	0.0			-551,382	0.0			-35,037	0.0		
9	33.9	31.6	0	0.0		0	0.0			-497,287	0.0			-545,687	0.0			0	0.0		
10	36.0	33.0	0	0.0		0	0.0			-477,910	0.0			-522,862	0.0			0	0.0		
11	38.5	34.8	0	0.0		0	0.0			-441,935	0.0			-481,174	0.0			0	0.0		
12	41.3	36.5	0	0.0		0	0.0			-363,945	0.0			-396,189	0.0			0	0.0		
13	43.8	38.1	0	0.0		0	0.0			-317,106	0.0			-343,866	0.0			0	0.0		
14	45.9	39.5	0	0.0		0	0.0			-283,832	0.0			-305,774	0.0			0	0.0		
15	47.2	40.4	0	0.0		0	0.0			-221,219	0.0			-236,229	0.0			0	0.0		
16	47.7	40.6	0	0.0		0	0.0			-221,306	0.0			-221,301	0.0			0	0.0		
17	47.5	40.2	0	0.0		0	0.0			-218,481	0.0			-218,490	0.0			0	0.0		
18	47.0	39.8	0	0.0		0	0.0			-292,096	0.0			-292,096	0.0			0	0.0		
19	46.2	39.9	0	0.0		0	0.0			-280,674	0.0			-280,674	0.0			0	0.0		
20	45.1	39.7	0	0.0		0	0.0			-303,346	0.0			-303,346	0.0			0	0.0		
21	43.8	39.2	0	0.0		-22,033	0.0			-331,482	0.0			-331,482	0.0			-22,033	0.0		
22	42.3	38.3	0	0.0		-54,909	0.0			-364,190	0.0			-364,190	0.0			-54,909	0.0		
23	40.7	37.2	-53,390	0.0		-62,353	0.0			-414,261	0.0			-414,261	0.0			-62,353	0.0		
24	39.1	35.8	-122,323	0.0		-155,433	0.0			-446,424	0.0			-446,424	0.0			-155,433	0.0		

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
BLDG G101, BASELINE

March		----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----				
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	45.4	41.6	-185,393		0.0		0		0.0		0		0.0		-218,375		0.0		-234,822		0.0	
2	43.3	39.7	-201,204		0.0		0		0.0		0		0.0		-243,440		0.0		-322,581		0.0	
3	41.6	38.6	-249,004		0.0		0		0.0		0		0.0		-266,622		0.0		-360,739		0.0	
4	40.6	37.5	-339,254		0.0		0		0.0		-51,245		0.0		-277,378		0.0		-411,930		0.0	
5	40.2	37.3	-359,729		0.0		-6,852		0.0		-64,849		0.0		-322,688		0.0		-438,243		0.0	
6	40.6	37.8	-364,534		0.0		-63,999		0.0		-150,560		0.0		-408,285		0.0		-441,996		0.0	
7	41.6	39.0	-215,482		0.0		-55,746		0.0		-136,288		0.0		-327,323		0.0		-355,286		0.0	
8	43.3	40.7	0		0.0		0		0.0		-121,813		0.0		-302,380		0.0		0		0.0	
9	45.4	42.5	0		0.0		0		0.0		-125,899		0.0		-292,270		0.0		0		0.0	
10	47.9	44.3	0		0.0		0		0.0		-137,685		0.0		-276,853		0.0		0		0.0	
11	50.6	45.5	0		0.0		0		0.0		-86,074		0.0		-182,390		0.0		0		0.0	
12	53.3	46.8	0		0.0		0		0.0		-37,677		0.0		-94,567		0.0		0		0.0	
13	55.8	48.5	0		0.0		0		0.0		-17,808		0.0		-45,277		0.0		0		0.0	
14	58.0	49.6	0		0.0		0		0.0		0		0.0		-6,355		0.0		0		0.0	
15	59.6	50.3	0		0.0		0		0.0		0		0.0		0		0.0		0		0.0	
16	60.7	50.9	0		0.0		0		0.0		0		0.0		0		0.0		0		0.0	
17	61.0	50.9	0		0.0		0		0.0		-2,562		0.0		-2,562		0.0		0		0.0	
18	60.7	50.7	0		0.0		0		0.0		-21,448		0.0		-21,448		0.0		0		0.0	
19	59.6	50.7	0		0.0		0		0.0		-56,054		0.0		-56,054		0.0		0		0.0	
20	58.0	50.5	0		0.0		0		0.0		-58,531		0.0		-58,531		0.0		0		0.0	
21	55.8	49.4	0		0.0		0		0.0		-67,601		0.0		-67,601		0.0		0		0.0	
22	53.3	47.8	0		0.0		0		0.0		-94,437		0.0		-94,437		0.0		0		0.0	
23	50.6	45.9	0		0.0		-1,103		0.0		-114,302		0.0		-138,378		0.0		-1,103		0.0	
24	47.9	43.8	0		0.0		0		0.0		-136,227		0.0		-183,759		0.0		0		0.0	

April	----- Design -----						----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	57.7	53.9			0	0.0			0	0.0			0	0.0			0	0.0			0	0.0
2	55.9	52.7			0	0.0			0	0.0			0	0.0			0	0.0			0	0.0
3	54.2	51.3			0	0.0			0	0.0			0	0.0			0	0.0			0	0.0
4	52.9	50.2			0	0.0			0	0.0			0	0.0					-18,096			0.0
5	51.9	49.6			0	0.0			0	0.0			0	0.0					-36,565			0.0
6	51.2	49.2	-10,419			0.0			0	0.0			0	0.0					-63,104			0.0
7	51.0	49.3			0	0.0			0	0.0			0	0.0					-32,981			0.0
8	51.6	49.9			0	0.0			0	0.0			0	0.0					0			0.0
9	53.3	50.6			0	0.0			0	0.0			0	0.0					0			0.0
10	55.9	51.8			0	0.0			0	0.0			0	0.0					0			0.0
11	59.0	53.4			0	0.0			0	0.0			0	0.0					0			0.0
12	62.4	55.6			0	0.0			0	0.0			0	0.0					0			0.0
13	65.5	57.7			0	0.0			0	0.0			0	0.0					0			0.0
14	68.1	59.4			0	0.0			0	0.0			0	0.0					0			0.0
15	69.8	60.7			0	0.0			0	0.0			0	0.0					0			0.0
16	70.4	60.9			0	0.0			0	0.0			0	0.0					0			0.0
17	70.2	60.2			0	0.0			0	0.0			0	0.0					0			0.0
18	69.5	60.1			0	0.0			0	0.0			0	0.0					0			0.0
19	68.5	59.4			0	0.0			0	0.0			0	0.0					0			0.0
20	67.2	59.7			0	0.0			0	0.0			0	0.0					0			0.0
21	65.5	59.3			0	0.0			0	0.0			0	0.0					0			0.0
22	63.7	58.8			0	0.0			0	0.0			0	0.0					0			0.0
23	61.7	57.3			0	0.0			0	0.0			0	0.0					0			0.0
24	59.7	55.6			0	0.0			0	0.0			0	0.0					0			0.0

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
BLDG G101, BASELINE

May	----- Design -----						----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	66.6	62.3		0	243.1			0	17.3			0	18.6			0	18.6			0	18.6	
2	64.5	60.4		0	198.2			0	13.1			0	13.6			0	13.6			0	13.6	
3	62.7	59.1		0	165.2			0	10.0			0	10.1			0	10.1			0	10.1	
4	61.2	58.1		0	136.5			0	8.0			0	8.0			0	8.0			0	8.0	
5	60.0	57.1		0	115.8			0	6.4			0	6.4			0	6.4			0	6.4	
6	59.3	56.6		0	25.6			0	10.5			0	10.6			0	10.6			0	10.6	
7	59.0	56.5		0	36.8			0	12.5			0	12.5			0	12.5			0	12.5	
8	59.5	56.6		0	109.1			0	45.2			0	13.4			0	13.4			0	46.0	
9	60.9	56.6		0	138.1			0	81.5			0	13.9			0	13.9			0	81.4	
10	63.0	57.2		0	142.8			0	100.4			0	18.0			0	18.0			0	100.6	
11	65.7	58.1		0	149.5			0	104.9			0	19.7			0	19.7			0	104.9	
12	68.7	59.8		0	158.2			0	109.0			0	22.6			0	22.6			0	109.0	
13	71.7	61.6		0	144.7			0	96.4			0	30.6			0	30.6			0	96.4	
14	74.5	63.4		0	181.8			0	130.8			0	40.6			0	40.6			0	130.8	
15	76.6	64.8		0	192.5			0	144.7			0	52.0			0	52.0			0	144.8	
16	78.0	65.6		0	194.0			0	147.5			0	60.1			0	60.1			0	147.5	
17	78.5	65.6		0	162.3			0	124.8			0	61.7			0	61.7			0	124.8	
18	78.2	65.8		0	114.7			0	84.8			0	56.8			0	56.8			0	84.8	
19	77.5	65.6		0	68.3			0	48.0			0	48.1			0	48.1			0	48.0	
20	76.3	66.1		0	60.2			0	45.1			0	45.1			0	45.1			0	45.1	
21	74.8	67.2		0	51.2			0	41.1			0	41.1			0	41.1			0	41.1	
22	73.0	66.4		0	42.2			0	35.2			0	35.2			0	35.2			0	35.2	
23	70.9	65.4		0	34.9			0	28.8			0	28.8			0	28.8			0	28.8	
24	68.7	64.0		0	28.1			0	23.7			0	23.7			0	23.7			0	23.7	

June	----- Design -----					----- Weekday -----			----- Saturday-----				----- Sunday -----				----- Monday -----		
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	
1	73.0	67.9		0	52.2		0	33.8		0	37.5		0	37.5		0	37.5		
2	71.2	66.1		0	47.1		0	28.9		0	30.8		0	30.8		0	30.8		
3	69.7	65.2		0	42.7		0	24.7		0	25.4		0	25.4		0	25.4		
4	68.5	64.3		0	39.7		0	20.6		0	20.9		0	20.9		0	20.9		
5	67.8	64.2		0	37.4		0	18.5		0	18.7		0	18.7		0	18.7		
6	67.6	64.2		0	56.4		0	25.0		0	25.1		0	25.1		0	25.1		
7	68.1	64.8		0	72.3		0	33.3		0	33.8		0	33.8		0	33.8		
8	69.4	65.7		0	150.3		0	110.6		0	40.6		0	40.6		0	113.4		
9	71.6	66.2		0	184.6		0	143.0		0	46.1		0	46.1		0	142.9		
10	74.2	67.2		0	186.3		0	154.4		0	59.8		0	59.8		0	154.4		
11	77.2	68.5		0	195.3		0	155.7		0	62.0		0	62.0		0	155.7		
12	80.2	70.0		0	204.0		0	163.6		0	70.5		0	70.5		0	163.6		
13	82.8	70.8		0	185.5		0	147.7		0	83.8		0	83.8		0	147.7		
14	85.0	71.6		0	228.0		0	190.7		0	96.2		0	96.2		0	190.7		
15	86.3	72.3		0	235.1		0	200.3		0	105.7		0	105.7		0	200.3		
16	86.8	72.1		0	234.4		0	199.5		0	103.9		0	103.9		0	199.5		
17	86.6	71.7		0	196.8		0	165.0		0	97.6		0	97.6		0	165.0		
18	85.8	71.5		0	145.3		0	121.3		0	92.3		0	92.3		0	121.3		
19	84.7	71.2		0	96.2		0	77.3		0	78.8		0	78.8		0	77.3		
20	83.2	71.5		0	88.2		0	76.2		0	77.0		0	77.0		0	76.2		
21	81.4	71.7		0	79.6		0	68.9		0	69.1		0	69.1		0	68.9		
22	79.3	71.4		0	70.4		0	61.1		0	61.1		0	61.1		0	61.1		
23	77.2	70.5		0	62.5		0	53.7		0	53.7		0	53.7		0	53.7		
24	75.1	69.1		0	56.2		0	45.3		0	45.3		0	45.3		0	45.3		

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
BLDG G101, BASELINE

July	----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton		
1	72.0	69.3		0	54.1		0	31.8		0	36.8		0	36.8		0	36.8			
2	70.5	68.0		0	47.4		0	28.1		0	30.1		0	30.1		0	30.1			
3	69.4	67.1		0	42.9		0	24.7		0	25.3		0	25.3		0	25.3			
4	68.5	66.4		0	40.2		0	21.8		0	22.0		0	22.0		0	22.0			
5	67.9	66.0		0	37.9		0	19.8		0	19.8		0	19.8		0	19.8			
6	67.7	65.9		0	52.0		0	24.1		0	24.1		0	24.1		0	24.1			
7	68.1	66.3		0	72.6		0	33.2		0	33.4		0	33.4		0	33.4			
8	69.1	67.3		0	157.0		0	120.6		0	43.4		0	43.4		0	121.9			
9	70.8	68.0		0	184.5		0	147.6		0	49.3		0	49.3		0	147.3			
10	72.9	69.1		0	190.3		0	156.8		0	60.5		0	60.5		0	156.9			
11	75.2	70.5		0	196.9		0	158.3		0	63.0		0	63.0		0	158.3			
12	77.5	71.7		0	204.5		0	164.2		0	70.9		0	70.9		0	164.2			
13	79.6	72.7		0	187.1		0	145.0		0	82.0		0	82.0		0	145.0			
14	81.3	73.5		0	228.0		0	191.7		0	94.4		0	94.4		0	191.7			
15	82.3	73.7		0	235.2		0	199.0		0	103.8		0	103.8		0	199.0			
16	82.7	73.5		0	234.3		0	197.6		0	101.2		0	101.2		0	197.6			
17	82.5	73.1		0	195.7		0	161.2		0	93.6		0	93.6		0	161.2			
18	82.0	72.6		0	141.5		0	116.5		0	88.9		0	88.9		0	116.5			
19	81.1	73.2		0	91.0		0	73.5		0	76.4		0	76.4		0	73.5			
20	79.9	73.8		0	85.9		0	73.9		0	74.3		0	74.3		0	73.9			
21	78.5	73.9		0	77.0		0	70.0		0	70.0		0	70.0		0	70.0			
22	76.9	73.1		0	68.4		0	61.6		0	61.7		0	61.7		0	61.6			
23	75.2	71.9		0	61.8		0	52.5		0	52.5		0	52.5		0	52.5			
24	73.5	70.8		0	55.9		0	45.1		0	45.1		0	45.1		0	45.1			

August	----- Design -----					----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	
1	72.7	70.2		0	58.2		0	33.1		0	39.0		0	39.0		0	39.0		0	39.0	
2	71.2	69.0		0	48.0		0	30.8		0	32.8		0	32.8		0	32.8		0	32.8	
3	69.9	68.0		0	42.1		0	26.9		0	27.3		0	27.3		0	27.3		0	27.3	
4	68.8	67.1		0	38.9		0	23.2		0	23.3		0	23.3		0	23.3		0	23.3	
5	68.0	66.6		0	36.6		0	19.8		0	19.9		0	19.9		0	19.9		0	19.9	
6	67.5	66.2		0	42.3		0	20.7		0	20.7		0	20.7		0	20.7		0	20.7	
7	67.3	66.1		0	69.1		0	29.3		0	29.3		0	29.3		0	29.3		0	29.3	
8	67.8	66.5		0	153.3		0	112.3		0	34.7		0	34.7		0	114.9		0	114.9	
9	69.1	67.0		0	184.3		0	139.1		0	41.1		0	41.1		0	139.6		0	139.6	
10	71.2	67.8		0	188.5		0	144.3		0	49.7		0	49.7		0	144.2		0	144.2	
11	73.8	68.7		0	195.2		0	149.9		0	55.1		0	55.1		0	149.9		0	149.9	
12	76.5	70.0		0	202.4		0	159.8		0	66.2		0	66.2		0	159.8		0	159.8	
13	79.1	71.2		0	182.2		0	144.4		0	80.9		0	80.9		0	144.4		0	144.4	
14	81.1	72.6		0	228.2		0	190.6		0	93.0		0	93.0		0	190.6		0	190.6	
15	82.5	73.6		0	237.2		0	200.1		0	104.4		0	104.4		0	200.1		0	200.1	
16	83.0	73.7		0	235.5		0	192.6		0	95.2		0	95.2		0	192.6		0	192.6	
17	82.8	73.5		0	198.5		0	163.6		0	95.0		0	95.0		0	163.6		0	163.6	
18	82.3	73.5		0	138.9		0	111.6		0	84.0		0	84.0		0	111.6		0	111.6	
19	81.5	73.1		0	91.6		0	72.4		0	75.3		0	75.3		0	72.4		0	72.4	
20	80.4	73.7		0	84.7		0	72.9		0	73.3		0	73.3		0	72.9		0	72.9	
21	79.1	74.9		0	77.5		0	69.2		0	69.3		0	69.3		0	69.2		0	69.2	
22	77.6	73.9		0	69.1		0	63.7		0	63.7		0	63.7		0	63.7		0	63.7	
23	76.0	72.7		0	60.9		0	55.4		0	55.4		0	55.4		0	55.4		0	55.4	
24	74.3	71.3		0	54.7		0	46.6		0	46.6		0	46.6		0	46.6		0	46.6	

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
BLDG G101, BASELINE

September			----- Design -----			----- Weekday -----			----- Saturday-----			----- Sunday -----			----- Monday -----		
Hour	OADB	OAWB	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton
1	69.8	66.1		0	40.1		0	22.7		0	25.3		0	25.3		0	25.3
2	68.0	64.5		0	32.2		0	19.4		0	20.6		0	20.6		0	20.6
3	66.3	63.0		0	27.8		0	15.5		0	16.1		0	16.1		0	16.1
4	64.9	61.9		0	24.4		0	12.0		0	12.3		0	12.3		0	12.3
5	63.9	61.3		0	23.2		0	9.2		0	9.3		0	9.3		0	9.3
6	63.2	61.0		0	22.4		0	8.3		0	8.3		0	8.3		0	8.3
7	63.0	60.8		0	44.4		0	15.1		0	15.1		0	15.1		0	15.1
8	63.4	61.4		0	117.6		0	63.0		0	18.7		0	18.7		0	63.4
9	64.7	61.8		0	151.7		0	99.5		0	18.4		0	18.4		0	100.5
10	66.6	62.1		0	161.0		0	108.2		0	20.0		0	20.0		0	108.7
11	69.1	62.9		0	174.9		0	124.4		0	29.6		0	29.6		0	124.7
12	71.8	63.7		0	184.7		0	131.1		0	38.1		0	38.1		0	131.3
13	74.5	65.5		0	165.8		0	116.4		0	49.0		0	49.0		0	116.5
14	77.0	67.1		0	204.0		0	155.8		0	65.0		0	65.0		0	155.9
15	78.9	68.2		0	211.2		0	162.9		0	69.3		0	69.3		0	162.9
16	80.2	68.6		0	209.1		0	168.6		0	72.3		0	72.3		0	168.6
17	80.6	68.5		0	168.6		0	137.6		0	70.1		0	70.1		0	137.6
18	80.4	68.9		0	110.8		0	87.0		0	58.7		0	58.7		0	87.0
19	79.7	70.0		0	76.7		0	57.1		0	58.1		0	58.1		0	57.1
20	78.7	71.2		0	68.1		0	55.7		0	56.1		0	56.1		0	55.7
21	77.3	71.6		0	59.7		0	52.9		0	53.0		0	53.0		0	52.9
22	75.6	70.5		0	51.3		0	47.3		0	47.4		0	47.4		0	47.3
23	73.7	69.4		0	44.4		0	40.4		0	40.4		0	40.4		0	40.4
24	71.8	67.7		0	38.4		0	32.4		0	32.4		0	32.4		0	32.4

October			----- Design -----			----- Weekday -----			----- Saturday-----			----- Sunday -----			----- Monday -----		
Hour	OADB	OAWB	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton	Htg	Btuh	Clg Ton
1	54.8	51.3		0	3.2		0	6.7		0	6.6		0	6.6		0	6.6
2	52.9	49.6		0	1.7		0	5.4		0	5.3		0	5.3		0	5.3
3	51.2	48.2		0	0.9		0	4.4		0	4.4		0	4.4		0	4.4
4	49.8	47.2		0	0.0		0	3.6		0	3.5		0	3.5		0	3.5
5	48.8	46.2		0	0.0		0	2.0		0	1.9		0	1.9		0	1.9
6	48.2	45.7		0	0.0		0	1.5		0	1.5		0	1.5		0	1.5
7	47.9	45.6		0	5.1		0	5.5		0	5.4		0	5.4		0	5.4
8	48.5	46.2		0	24.0		0	14.9		0	7.2		0	7.2		0	14.8
9	50.3	47.3		0	54.2		0	27.3		0	6.9		0	6.9		0	24.4
10	52.9	48.7		0	75.8		0	32.8		0	8.5		0	8.5		0	32.9
11	56.2	49.9		0	108.7		0	46.2		0	10.9		0	10.9		0	35.9
12	59.6	51.5		0	126.6		0	74.5		0	15.7		0	15.7		0	49.0
13	62.9	53.5		0	114.5		0	72.1		0	16.8		0	16.7		0	45.5
14	65.5	55.2		0	143.5		0	102.0		0	17.4		0	17.4		0	78.1
15	67.3	56.3		0	150.4		0	109.5		0	18.5		0	18.5		0	98.9
16	67.9	56.6		0	148.6		0	111.4		0	18.7		0	18.7		0	111.4
17	67.7	56.4		0	109.8		0	82.5		0	14.5		0	14.5		0	82.5
18	67.0	56.6		0	66.8		0	45.7		0	12.8		0	12.8		0	45.7
19	66.0	57.6		0	32.1		0	18.9		0	12.7		0	12.7		0	18.9
20	64.6	57.9		0	24.1		0	16.1		0	12.1		0	12.1		0	16.1
21	62.9	57.3		0	18.1		0	12.9		0	11.2		0	11.2		0	12.9
22	61.0	56.0		0	12.2		0	9.6		0	9.4		0	9.4		0	9.6
23	59.0	54.8		0	7.4		0	8.6		0	8.5		0	8.5		0	8.6
24	56.9	53.0		0	4.4		0	7.7		0	7.7		0	7.7		0	7.7

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
BLDG G101, BASELINE

November			----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	48.7	45.7		0		0.0		0		0.0		0		0.0	-116,754		0.0	-128,687		0.0		
2	46.9	44.1		0		0.0		0		0.0		0		0.0	-129,770		0.0	-190,279		0.0		
3	45.5	42.8		-40,246		0.0		0		0.0		0		0.0	-128,072		0.0	-219,816		0.0		
4	44.6	41.9		-176,274		0.0		0		0.0		0		0.0	-149,085		0.0	-311,308		0.0		
5	44.4	42.0		-182,598		0.0		0		0.0		0		0.0	-208,666		0.0	-325,406		0.0		
6	44.8	42.7		-181,046		0.0		0		0.0		0		0.0	-251,400		0.0	-347,205		0.0		
7	45.9	43.9		-167,527		0.0		0		0.0		-19,779		0.0	-231,691		0.0	-329,877		0.0		
8	47.8	46.0		0		0.0		0		0.0		-32,468		0.0	-152,132		0.0	0		0.0		
9	50.2	48.0		0		0.0		0		0.0		-26,416		0.0	-123,708		0.0	0		0.0		
10	52.9	49.9		0		0.0		0		0.0		-16,942		0.0	-82,242		0.0	0		0.0		
11	55.8	51.1		0		0.0		0		0.0		-8,359		0.0	-36,830		0.0	0		0.0		
12	58.5	52.0		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
13	60.9	52.5		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
14	62.8	53.4		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
15	64.0	53.8		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
16	64.4	53.9		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
17	64.1	53.7		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
18	63.2	53.7		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
19	61.8	54.2		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
20	60.0	53.6		0		0.0		0		0.0		0		0.0	0		0.0	0		0.0		
21	57.9	52.7		0		0.0		0		0.0		-4,433		0.0	-4,433		0.0	0		0.0		
22	55.6	51.2		0		0.0		0		0.0		-21,093		0.0	-48,811		0.0	0		0.0		
23	53.2	49.5		0		0.0		0		0.0		-63,794		0.0	-77,035		0.0	0		0.0		
24	50.8	47.6		0		0.0		0		0.0		-90,885		0.0	-90,877		0.0	0		0.0		

December			----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	37.5	35.3		0		0.0		-15,606		0.0		-22,508		0.0	-450,085		0.0	-486,611		0.0		
2	37.1	35.1		0		0.0		-76,828		0.0		-76,824		0.0	-472,380		0.0	-511,037		0.0		
3	37.4	35.5		0		0.0		-185,970		0.0		-143,257		0.0	-486,845		0.0	-526,921		0.0		
4	38.1	36.2		-25,720		0.0		-226,214		0.0		-226,241		0.0	-481,902		0.0	-521,952		0.0		
5	39.3	37.6		-91,762		0.0		-220,698		0.0		-269,550		0.0	-513,555		0.0	-513,536		0.0		
6	40.9	39.2		-257,932		0.0		-214,318		0.0		-325,111		0.0	-499,859		0.0	-499,885		0.0		
7	42.7	41.2		-266,568		0.0		-212,665		0.0		-317,308		0.0	-488,600		0.0	-488,599		0.0		
8	44.7	43.1		-1,260		0.0		0		0.0		-294,067		0.0	-406,180		0.0	0		0.0		
9	46.8	45.3		0		0.0		0		0.0		-318,485		0.0	-346,638		0.0	0		0.0		
10	48.8	47.0		0		0.0		0		0.0		-254,684		0.0	-277,788		0.0	0		0.0		
11	50.7	48.1		0		0.0		0		0.0		-190,578		0.0	-207,926		0.0	0		0.0		
12	52.2	48.8		0		0.0		0		0.0		-130,645		0.0	-142,689		0.0	0		0.0		
13	53.4	49.2		0		0.0		0		0.0		-84,547		0.0	-91,749		0.0	0		0.0		
14	54.1	49.2		0		0.0		0		0.0		-47,349		0.0	-50,408		0.0	0		0.0		
15	54.4	48.9		0		0.0		0		0.0		-31,685		0.0	-31,685		0.0	0		0.0		
16	54.0	48.2		0		0.0		0		0.0		-37,970		0.0	-37,970		0.0	0		0.0		
17	53.0	47.3		0		0.0		0		0.0		-107,060		0.0	-108,055		0.0	0		0.0		
18	51.4	46.3		0		0.0		0		0.0		-126,889		0.0	-130,647		0.0	0		0.0		
19	49.3	45.4		0		0.0		0		0.0		-162,447		0.0	-171,222		0.0	0		0.0		
20	47.0	43.5		0		0.0		0		0.0		-210,331		0.0	-224,364		0.0	0		0.0		
21	44.5	41.5		0		0.0		0		0.0		-275,119		0.0	-294,789		0.0	0		0.0		
22	42.2	39.3		0		0.0		0		0.0		-326,247		0.0	-351,176		0.0	0		0.0		
23	40.1	37.6		0		0.0		0		0.0		-369,415		0.0	-399,359		0.0	0		0.0		
24	38.5	36.2		0		0.0		0		0.0		-405,880		0.0	-439,411		0.0	0		0.0		

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
 BLDG G101, BASELINE

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC On Peak (kWh)	DEMAND On Peak (kW)	GAS On Peak (Therm)	WATER (1000 G1)	GAS DMND On Peak (Thrm/hr)
Jan	144,655	361	1,742	1	9
Feb	131,981	361	1,668	1	8
March	142,834	361	409	0	5
April	128,736	361	6	0	1
May	196,187	607	0	0	0
June	222,154	680	0	0	0
July	218,601	667	0	0	0
Aug	226,866	670	0	0	0
Sept	194,978	633	0	0	0
Oct	172,681	540	0	0	0
Nov	131,660	361	253	0	4
Dec	139,831	361	1,160	1	6
Total	2,051,163	680	5,238	3	9

Building Energy Consumption = 62,609 (Btu/Sq Ft/Year)
 Source Energy Consumption = 179,357 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, BASELINE

----- E Q U I P M E N T E N E R G Y C O N S U M P T I O N -----														
Ref	Equip	----- Monthly Consumption -----												Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTW20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S	AIR-CLD RECIP 20-35 TONS												
	ELEC	0	0	0	0	5198	9148	8958	9095	6178	1915	0	0	40,492
	PK	0.0	0.0	0.0	0.0	33.2	40.3	38.8	38.9	32.7	19.1	0.0	0.0	40.3
1	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	626	1158	1141	1149	760	183	0	0	5,017
	PK	0.0	0.0	0.0	0.0	3.7	4.5	4.4	4.4	3.9	2.7	0.0	0.0	4.5
1	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	4008	5256	5431	5431	4599	1569	0	0	26,295
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313	CONTROLS												
	ELEC	0	0	0	0	165	216	223	223	189	65	0	0	1,081
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S	AIR-CLD RECIP <20 TONS												
	ELEC	0	0	0	0	3232	5135	5072	5238	3685	1702	0	0	24,064
	PK	0.0	0.0	0.0	0.0	18.8	22.4	22.0	22.1	19.0	12.0	0.0	0.0	22.4

2	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	387	646	642	657	452	159	0	0	2,943
	PK	0.0	0.0	0.0	0.0	2.1	2.5	2.5	2.5	2.2	1.7	0.0	0.0	2.5
2	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	1569	1656	1711	1711	1656	658	0	0	8,961
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313	CONTROLS												
	ELEC	0	0	0	0	205	216	223	223	216	86	0	0	1,169
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS												
	ELEC	0	0	0	0	6061	10762	10633	10667	7086	1861	0	0	47,069
	PK	0.0	0.0	0.0	0.0	35.4	43.0	41.6	41.6	37.0	24.4	0.0	0.0	43.0
3	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	731	1346	1348	1336	875	180	0	0	5,815
	PK	0.0	0.0	0.0	0.0	4.2	5.1	5.0	5.0	4.5	3.2	0.0	0.0	5.1
3	EQ5313	CONTROLS												
	ELEC	0	0	0	0	163	216	223	223	180	61	0	0	1,067
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L	AIR-CLD RECIP >55 TONS												
	ELEC	0	0	0	0	19622	33508	31812	32514	22418	11914	0	0	151,788
	PK	0.0	0.0	0.0	0.0	116.1	151.2	142.8	145.3	125.6	74.1	0.0	0.0	151.2
4	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	2204	4087	3936	3996	2647	976	0	0	17,845
	PK	0.0	0.0	0.0	0.0	14.1	18.1	17.1	17.3	15.3	10.2	0.0	0.0	18.1
4	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	15044	0	0	92,524
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313	CONTROLS												
	ELEC	0	0	0	0	223	216	223	223	216	214	0	0	1,315
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	1797	1623	1797	1739	1797	1739	1797	1797	1739	1797	1739	1797	21,156
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371	FAN COIL SUPPLY FAN												
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,293
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371	FAN COIL SUPPLY FAN												

V 600
PAGE

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, BASELINE[illegible]

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, BASELINE

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 680.1 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Percent Of Tot (%)
----------------------	------------------------	-----------------------	---------------------------	--------------------------

Cooling Equipment

1	EQ1121S	AIR-CLD RECIP 20-35 TONS	52.3	7.69
2	EQ1120S	AIR-CLD RECIP <20 TONS	27.5	4.04
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	48.4	7.11
4	EQ1122L	AIR-CLD RECIP >55 TONS	190.7	28.03

Sub Total			318.8	46.88
-----------	--	--	-------	-------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Air Moving Equipment

1		SUMMATION OF FAN ELECTRICAL DEMAND	22.7	3.34
2		SUMMATION OF FAN ELECTRICAL DEMAND	2.4	0.36
3		SUMMATION OF FAN ELECTRICAL DEMAND	3.6	0.53
4		SUMMATION OF FAN ELECTRICAL DEMAND	9.3	1.36
5		SUMMATION OF FAN ELECTRICAL DEMAND	9.6	1.41

Sub Total			47.6	6.99
-----------	--	--	------	------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Miscellaneous

Lights			166.1	24.43
Base Utilities			0.0	0.00
Misc Equipment			147.6	21.70
Sub Total			313.7	46.13

Grand Total			680.1	100.00
-------------	--	--	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
 BLDG G101, BASELINE

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
 Gross Conditioned Floor Area (sqft)..... 120,182
 ACM Multiplier 1.025

ENERGY USE SUMMARY

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,551.1	523,832.6	3.1	7.3	638,965.9	5.4
Primary Cooling						
Compressor	263,412.8	0.0	0.0	11.9	2,697,353.0	23.0
Tower/Cond Fans	31,621.0	0.0	0.0	1.4	323,800.0	2.8
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	4,632.0	0.0	0.0	0.2	47,431.8	0.4
Auxiliary						
Supply Fans	416,644.7	0.0	0.0	18.9	4,266,451.0	36.4
Circulation Pumps	157,303.7	0.0	0.0	7.1	1,610,793.6	13.7
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	573,948.4	0.0	0.0	26.0	5,877,245.0	50.1
Lighting	729,764.0	0.0	0.0	33.1	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	19.9	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	2,051,163.1	523,832.6	3.1	100.0	21,555,360.0	181.4

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
 BLDG G101, ECO #1

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC On Peak (kWh)	DEMAND On Peak (kW)	GAS On Peak (Therm)	WATER (1000 G1)	GAS DMND On Peak (Thrm/hr)
Jan	143,472	361	1,092	1	7
Feb	129,940	361	1,022	1	6
March	141,114	361	190	0	3
April	128,629	361	0	0	0
May	194,990	592	0	0	0
June	216,860	658	0	0	0
July	213,780	647	0	0	0
Aug	222,424	651	0	0	0
Sept	192,762	615	0	0	0
Oct	175,877	533	0	0	0
Nov	130,522	361	115	0	3
Dec	138,163	361	633	0	4
Total	2,028,532	658	3,052	2	7

Building Energy Consumption = 60,147 (Btu/Sq Ft/Year)
 Source Energy Consumption = 175,513 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #1

----- E Q U I P M E N T E N E R G Y C O N S U M P T I O N -----

Ref Num	Equip Code	----- Monthly Consumption -----												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S		AIR-CLD RECIP 20-35 TONS											
	ELEC	0	0	0	0	4915	8372	8286	8481	5807	2193	0	0	38,054
	PK	0.0	0.0	0.0	0.0	30.3	36.8	35.9	35.9	29.9	18.3	0.0	0.0	36.8
1	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	585	1046	1039	1055	706	206	0	0	4,637
	PK	0.0	0.0	0.0	0.0	3.4	4.1	4.1	4.1	3.6	2.6	0.0	0.0	4.1
1	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	4300	5256	5431	5431	4818	1606	0	0	26,842
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313		CONTROLS											
	ELEC	0	0	0	0	177	216	223	223	198	66	0	0	1,103
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S		AIR-CLD RECIP <20 TONS											
	ELEC	0	0	0	0	3149	4832	4790	4992	3539	1878	0	0	23,180
	PK	0.0	0.0	0.0	0.0	17.5	20.8	20.6	20.7	17.7	11.6	0.0	0.0	20.8

2	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	370	600	596	616	428	171	0	0	2,781
	PK	0.0	0.0	0.0	0.0	1.9	2.3	2.3	2.3	2.1	1.6	0.0	0.0	2.3
2	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	1640	1656	1711	1711	1656	842	0	0	9,216
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313		CONTROLS											
	ELEC	0	0	0	0	214	216	223	223	216	110	0	0	1,202
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L		AIR-CLD COND COMP 35-60 TONS											
	ELEC	0	0	0	0	5635	9289	9268	9434	6420	2537	0	0	42,582
	PK	0.0	0.0	0.0	0.0	31.1	37.7	36.7	36.7	32.4	22.2	0.0	0.0	37.7
3	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	669	1164	1177	1182	785	229	0	0	5,206
	PK	0.0	0.0	0.0	0.0	3.7	4.5	4.4	4.4	3.9	2.9	0.0	0.0	4.5
3	EQ5313		CONTROLS											
	ELEC	0	0	0	0	175	216	223	223	195	76	0	0	1,109
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L		AIR-CLD RECIP >55 TONS											
	ELEC	0	0	0	0	19020	31367	29872	30682	21433	12901	0	0	145,276
	PK	0.0	0.0	0.0	0.0	108.8	141.5	133.9	136.9	117.9	70.9	0.0	0.0	141.5
4	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	2126	3824	3691	3768	2524	1046	0	0	16,980
	PK	0.0	0.0	0.0	0.0	13.2	17.0	16.0	16.3	14.3	9.8	0.0	0.0	17.0
4	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	15698	0	0	93,178
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313		CONTROLS											
	ELEC	0	0	0	0	223	216	223	223	216	223	0	0	1,325
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	1797	1623	1797	1739	1797	1739	1797	1797	1739	1797	1739	1797	21,155
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371		FAN COIL SUPPLY FAN											
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371		FAN COIL SUPPLY FAN											

V 600
PAGE

[illegible]

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #1

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 657.9 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Perct Of Tot (%)
----------------------	------------------------	-----------------------	---------------------------	------------------------

Cooling Equipment

1	EQ1121S	AIR-CLD RECIP 20-35 TONS	48.5	7.37
2	EQ1120S	AIR-CLD RECIP <20 TONS	25.8	3.92
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	42.5	6.46
4	EQ1122L	AIR-CLD RECIP >55 TONS	179.9	27.34

Sub Total			296.7	45.09
-----------	--	--	-------	-------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Air Moving Equipment

1		SUMMATION OF FAN ELECTRICAL DEMAND	22.7	3.45
2		SUMMATION OF FAN ELECTRICAL DEMAND	2.4	0.37
3		SUMMATION OF FAN ELECTRICAL DEMAND	3.6	0.54
4		SUMMATION OF FAN ELECTRICAL DEMAND	9.3	1.41
5		SUMMATION OF FAN ELECTRICAL DEMAND	9.6	1.46

Sub Total			47.6	7.23
-----------	--	--	------	------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Miscellaneous

Lights			166.1	25.25
Base Utilities			0.0	0.00
Misc Equipment			147.6	22.43
Sub Total			313.7	47.68

Grand Total			657.9	100.00
-------------	--	--	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
 BLDG G101, ECO #1

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
 Gross Conditioned Floor Area (sqft)..... 120,182
 ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	6,736.1	305,157.1	2.1	4.5	390,195.8	3.3
Primary Cooling						
Compressor	249,092.3	0.0	0.0	11.8	2,550,711.3	21.8
Tower/Cond Fans	29,602.4	0.0	0.0	1.4	303,129.0	2.6
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	4,738.8	0.0	0.0	0.2	48,525.4	0.4
Auxiliary						
Supply Fans	416,647.3	0.0	0.0	19.7	4,266,477.5	36.4
Circulation Pumps	152,717.8	0.0	0.0	7.2	1,563,833.9	13.3
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	569,365.1	0.0	0.0	26.9	5,830,311.5	49.7
Lighting	729,764.0	0.0	0.0	34.5	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	20.7	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	2,028,532.6	305,157.1	2.1	100.0	21,093,440.0	177.4

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #2

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC On Peak (kWh)	DEMAND On Peak (kW)	GAS On Peak (Therm)	WATER (1000 G1)	GAS DMND On Peak (Thrm/hr)
Jan	143,178	361	1,417	1	8
Feb	130,114	361	1,300	1	7
March	141,196	361	267	0	5
April	128,629	361	0	0	0
May	196,672	599	0	0	0
June	220,702	668	0	0	0
July	217,685	657	0	0	0
Aug	225,859	661	0	0	0
Sept	194,945	624	0	0	0
Oct	175,221	536	0	0	0
Nov	130,386	361	146	0	4
Dec	138,721	361	883	1	6
Total	2,043,306	668	4,012	3	8

Building Energy Consumption = 61,365 (Btu/Sq Ft/Year)
Source Energy Consumption = 177,613 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #2

----- EQUIPMENT ENERGY CONSUMPTION -----														
Ref	Equip	----- Monthly Consumption -----												
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S													
		AIR-CLD RECIP 20-35 TONS												
	ELEC	0	0	0	0	5230	8941	8840	8949	6153	2095	0	0	40,207
	PK	0.0	0.0	0.0	0.0	31.8	38.7	37.6	37.7	31.4	18.8	0.0	0.0	38.7
1	EQ5200													
		CONDENSER FANS												
	ELEC	0	0	0	0	625	1128	1123	1128	753	198	0	0	4,955
	PK	0.0	0.0	0.0	0.0	3.5	4.3	4.3	4.3	3.8	2.7	0.0	0.0	4.3
1	EQ5001													
		CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	4300	5256	5431	5431	4818	1730	0	0	26,966
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313													
		CONTROLS												
	ELEC	0	0	0	0	177	216	223	223	198	71	0	0	1,108
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S													
		AIR-CLD RECIP <20 TONS												
	ELEC	0	0	0	0	3241	5117	5054	5236	3693	1735	0	0	24,075
	PK	0.0	0.0	0.0	0.0	18.6	22.2	21.9	22.1	19.0	12.0	0.0	0.0	22.2

2	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	387	643	639	656	452	161	0	0	2,938
	PK	0.0	0.0	0.0	0.0	2.1	2.5	2.5	2.5	2.2	1.7	0.0	0.0	2.5
2	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	1598	1656	1711	1711	1656	658	0	0	8,991
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313		CONTROLS											
	ELEC	0	0	0	0	208	216	223	223	216	86	0	0	1,173
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L		AIR-CLD COND COMP 35-60 TONS											
	ELEC	0	0	0	0	6062	10762	10633	10668	7088	1862	0	0	47,075
	PK	0.0	0.0	0.0	0.0	35.2	43.0	41.6	41.6	37.0	24.4	0.0	0.0	43.0
3	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	731	1346	1348	1336	875	180	0	0	5,816
	PK	0.0	0.0	0.0	0.0	4.2	5.0	5.0	5.0	4.5	3.2	0.0	0.0	5.0
3	EQ5313		CONTROLS											
	ELEC	0	0	0	0	163	216	223	223	180	61	0	0	1,067
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L		AIR-CLD RECIP >55 TONS											
	ELEC	0	0	0	0	19728	32444	31136	31769	22214	13292	0	0	150,583
	PK	0.0	0.0	0.0	0.0	109.7	142.4	135.0	137.9	118.7	71.1	0.0	0.0	142.4
4	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	2204	3955	3852	3904	2613	1075	0	0	17,603
	PK	0.0	0.0	0.0	0.0	13.3	17.1	16.1	16.4	14.4	9.9	0.0	0.0	17.1
4	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	15698	0	0	93,178
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313		CONTROLS											
	ELEC	0	0	0	0	223	216	223	223	216	223	0	0	1,325
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	1797	1623	1797	1739	1797	1739	1797	1797	1739	1797	1739	1797	21,155
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371		FAN COIL SUPPLY FAN											
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371		FAN COIL SUPPLY FAN											

PAGE

[illegible]

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #2

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 668.4 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Percent Of Tot (%)
----------------------	------------------------	-----------------------	---------------------------	--------------------------

Cooling Equipment

1	EQ1121S	AIR-CLD RECIP 20-35 TONS	50.6	7.57
2	EQ1120S	AIR-CLD RECIP <20 TONS	27.3	4.09
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	48.3	7.23
4	EQ1122L	AIR-CLD RECIP >55 TONS	180.9	27.06

Sub Total			307.1	45.95
-----------	--	--	-------	-------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Air Moving Equipment

1		SUMMATION OF FAN ELECTRICAL DEMAND	22.7	3.40
2		SUMMATION OF FAN ELECTRICAL DEMAND	2.4	0.36
3		SUMMATION OF FAN ELECTRICAL DEMAND	3.6	0.53
4		SUMMATION OF FAN ELECTRICAL DEMAND	9.3	1.39
5		SUMMATION OF FAN ELECTRICAL DEMAND	9.6	1.44

Sub Total			47.6	7.12
-----------	--	--	------	------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Miscellaneous

Lights			166.1	24.86
Base Utilities			0.0	0.00
Misc Equipment			147.6	22.08
Sub Total			313.7	46.94

Grand Total			668.4	100.00
-------------	--	--	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
BLDG G101, ECO #2

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 120,182
ACM Multiplier 1.025

ENERGY USE SUMMARY

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	6,910.0	401,179.3	2.8	5.8	493,052.7	4.2
Primary Cooling						
Compressor	261,940.2	0.0	0.0	12.1	2,682,274.0	22.9
Tower/Cond Fans	31,311.7	0.0	0.0	1.4	320,632.7	2.7
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	4,672.8	0.0	0.0	0.2	47,849.6	0.4
Auxiliary						
Supply Fans	416,647.3	0.0	0.0	19.3	4,266,477.5	36.4
Circulation Pumps	152,826.3	0.0	0.0	7.1	1,564,945.0	13.3
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	569,473.6	0.0	0.0	26.4	5,831,422.5	49.7
Lighting	729,764.0	0.0	0.0	33.8	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	20.3	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	2,043,306.1	401,179.3	2.8	100.0	21,345,796.0	179.6

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
 BLDG G101, ECO #3

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	WATER	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)		On Peak (Thrm/hr)
Jan	144,547	361	1,712	1	9
Feb	131,981	361	1,615	1	7
March	142,217	361	367	0	5
April	128,629	361	0	0	0
May	196,364	606	0	0	0
June	221,874	677	0	0	0
July	218,308	665	0	0	0
Aug	226,582	668	0	0	0
Sept	195,025	632	0	0	0
Oct	172,892	540	0	0	0
Nov	131,580	361	240	0	4
Dec	139,831	361	1,117	1	6
Total	2,049,830	677	5,052	3	9

Building Energy Consumption = 62,416 (Btu/Sq Ft/Year)
 Source Energy Consumption = 179,079 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #3

----- EQUIPMENT ENERGY CONSUMPTION -----														
Ref	Equip	----- Monthly Consumption -----												Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S	AIR-CLD RECIP 20-35 TONS												
	ELEC	0	0	0	0	5199	9152	8961	9099	6179	1914	0	0	40,504
	PK	0.0	0.0	0.0	0.0	33.1	40.4	38.9	39.0	32.8	19.2	0.0	0.0	40.4
1	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	626	1158	1141	1149	760	183	0	0	5,018
	PK	0.0	0.0	0.0	0.0	3.7	4.5	4.4	4.4	3.9	2.7	0.0	0.0	4.5
1	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	4008	5256	5431	5431	4599	1569	0	0	26,295
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313	CONTROLS												
	ELEC	0	0	0	0	165	216	223	223	189	65	0	0	1,081
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S	AIR-CLD RECIP <20 TONS												
	ELEC	0	0	0	0	3235	5140	5076	5242	3688	1702	0	0	24,084
	PK	0.0	0.0	0.0	0.0	18.8	22.4	22.0	22.2	19.0	12.0	0.0	0.0	22.4

2	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	387	647	642	657	452	159	0	0	2,943
	PK	0.0	0.0	0.0	0.0	2.1	2.5	2.5	2.5	2.2	1.7	0.0	0.0	2.5
2	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	1569	1656	1711	1711	1656	658	0	0	8,961
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313	CONTROLS												
	ELEC	0	0	0	0	205	216	223	223	216	86	0	0	1,169
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS												
	ELEC	0	0	0	0	6062	10762	10633	10668	7088	1862	0	0	47,075
	PK	0.0	0.0	0.0	0.0	35.2	43.0	41.6	41.6	37.0	24.4	0.0	0.0	43.0
3	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	731	1346	1348	1336	875	180	0	0	5,816
	PK	0.0	0.0	0.0	0.0	4.2	5.0	5.0	5.0	4.5	3.2	0.0	0.0	5.0
3	EQ5313	CONTROLS												
	ELEC	0	0	0	0	163	216	223	223	180	61	0	0	1,067
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L	AIR-CLD RECIP >55 TONS												
	ELEC	0	0	0	0	19778	33249	31542	32253	22455	12109	0	0	151,385
	PK	0.0	0.0	0.0	0.0	113.7	148.8	140.5	143.0	124.1	73.9	0.0	0.0	148.8
4	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	2221	4056	3903	3964	2651	992	0	0	17,787
	PK	0.0	0.0	0.0	0.0	13.8	17.7	16.8	17.1	15.1	10.2	0.0	0.0	17.7
4	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	15044	0	0	92,524
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313	CONTROLS												
	ELEC	0	0	0	0	223	216	223	223	216	214	0	0	1,315
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	1797	1623	1797	1739	1797	1739	1797	1797	1739	1797	1739	1797	21,155
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371	FAN COIL SUPPLY FAN												
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371	FAN COIL SUPPLY FAN												

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #3[illegible]

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #3

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 677.4 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Perct Of Tot (%)
----------------------	------------------------	-----------------------	---------------------------	------------------------

Cooling Equipment

1	EQ1121S	AIR-CLD RECIP 20-35 TONS	52.4	7.73
2	EQ1120S	AIR-CLD RECIP <20 TONS	27.5	4.06
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	48.3	7.13
4	EQ1122L	AIR-CLD RECIP >55 TONS	187.9	27.74

Sub Total			316.1	46.67
-----------	--	--	-------	-------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Air Moving Equipment

1		SUMMATION OF FAN ELECTRICAL DEMAND	22.7	3.35
2		SUMMATION OF FAN ELECTRICAL DEMAND	2.4	0.36
3		SUMMATION OF FAN ELECTRICAL DEMAND	3.6	0.53
4		SUMMATION OF FAN ELECTRICAL DEMAND	9.3	1.37
5		SUMMATION OF FAN ELECTRICAL DEMAND	9.6	1.42

Sub Total			47.6	7.02
-----------	--	--	------	------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Miscellaneous

Lights			166.1	24.53
Base Utilities			0.0	0.00
Misc Equipment			147.6	21.78
Sub Total			313.7	46.31

Grand Total			677.4	100.00
-------------	--	--	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
BLDG G101, ECO #3

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 120,182
ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,355.6	505,157.9	3.1	7.1	617,306.6	5.3
Primary Cooling						
Compressor	263,047.7	0.0	0.0	12.0	2,693,614.5	23.0
Tower/Cond Fans	31,563.6	0.0	0.0	1.4	323,212.2	2.8
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	4,632.0	0.0	0.0	0.2	47,431.8	0.4
Auxiliary						
Supply Fans	416,647.3	0.0	0.0	19.0	4,266,477.5	36.4
Circulation Pumps	156,586.3	0.0	0.0	7.1	1,603,447.4	13.7
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	573,233.6	0.0	0.0	26.1	5,869,925.0	50.1
Lighting	729,764.0	0.0	0.0	33.2	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	20.0	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	2,049,830.4	505,157.9	3.1	100.0	21,522,058.0	181.1

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #6

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	WATER	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)		On Peak (Thrm/hr)
Jan	145,103	361	2,322	1	10
Feb	132,515	361	2,247	1	9
March	143,330	361	649	1	6
April	128,791	365	10	0	2
May	195,258	607	0	0	0
June	222,159	680	0	0	0
July	218,605	667	0	0	0
Aug	226,869	671	0	0	0
Sept	194,981	633	0	0	0
Oct	170,947	540	0	0	0
Nov	132,043	361	440	1	5
Dec	140,306	361	1,655	1	7
Total	2,050,904	680	7,324	5	10

Building Energy Consumption = 64,337 (Btu/Sq Ft/Year)
Source Energy Consumption = 181,161 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #6

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTW20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S													
		AIR-CLD RECIP 20-35 TONS												
	ELEC	0	0	0	0	4981	9153	8962	9099	6179	1519	0	0	39,893
	PK	0.0	0.0	0.0	0.0	29.6	40.4	38.9	39.0	32.8	19.2	0.0	0.0	40.4
1	EQ5200													
		CONDENSER FANS												
	ELEC	0	0	0	0	609	1158	1141	1149	760	153	0	0	4,971
	PK	0.0	0.0	0.0	0.0	3.7	4.5	4.4	4.4	3.9	2.7	0.0	0.0	4.5
1	EQ5001													
		CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	3847	5256	5431	5431	4599	1285	0	0	25,849
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313													
		CONTROLS												
	ELEC	0	0	0	0	158	216	223	223	189	53	0	0	1,062
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S													
		AIR-CLD RECIP <20 TONS												
	ELEC	0	0	0	0	3047	5140	5076	5242	3688	1095	0	0	23,288
	PK	0.0	0.0	0.0	0.0	18.8	22.4	22.0	22.2	19.0	12.0	0.0	0.0	22.4

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #5

2	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	371	647	642	657	452	113	0	0	2,882
	PK	0.0	0.0	0.0	0.0	2.1	2.5	2.5	2.5	2.2	1.7	0.0	0.0	2.5
2	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	1355	1656	1711	1711	1656	455	0	0	8,544
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313		CONTROLS											
	ELEC	0	0	0	0	177	216	223	223	216	59	0	0	1,114
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L		AIR-CLD COND COMP 35-60 TONS											
	ELEC	0	0	0	0	5992	10762	10633	10668	7088	1747	0	0	46,890
	PK	0.0	0.0	0.0	0.0	34.6	43.0	41.6	41.6	37.0	24.4	0.0	0.0	43.0
3	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	725	1346	1348	1336	875	170	0	0	5,800
	PK	0.0	0.0	0.0	0.0	4.2	5.0	5.0	5.0	4.5	3.2	0.0	0.0	5.0
3	EQ5313		CONTROLS											
	ELEC	0	0	0	0	157	216	223	223	180	56	0	0	1,055
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L		AIR-CLD RECIP >55 TONS											
	ELEC	0	0	0	0	19619	33502	31806	32508	22415	11912	0	0	151,762
	PK	0.0	0.0	0.0	0.0	115.8	151.1	142.8	145.3	125.5	74.1	0.0	0.0	151.1
4	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	2204	4086	3936	3996	2647	976	0	0	17,845
	PK	0.0	0.0	0.0	0.0	14.0	18.1	17.1	17.3	15.3	10.2	0.0	0.0	18.1
4	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	15044	0	0	92,524
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313		CONTROLS											
	ELEC	0	0	0	0	223	216	223	223	216	214	0	0	1,315
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	1797	1623	1797	1739	1797	1739	1797	1797	1739	1797	1739	1797	21,155
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371		FAN COIL SUPPLY FAN											
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371		FAN COIL SUPPLY FAN											

V 600
PAGE

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #6[illegible]

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600
PAGE 5

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #6

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 680.1 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Percent Of Tot (%)
----------------------	------------------------	-----------------------	---------------------------	--------------------------

Cooling Equipment

1	EQ1121S	AIR-CLD RECIP 20-35 TONS	52.4	7.70
2	EQ1120S	AIR-CLD RECIP <20 TONS	27.5	4.05
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	48.3	7.10
4	EQ1122L	AIR-CLD RECIP >55 TONS	190.6	28.03

Sub Total			318.8	46.88
-----------	--	--	-------	-------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Air Moving Equipment

1		SUMMATION OF FAN ELECTRICAL DEMAND	22.7	3.34
2		SUMMATION OF FAN ELECTRICAL DEMAND	2.4	0.36
3		SUMMATION OF FAN ELECTRICAL DEMAND	3.6	0.53
4		SUMMATION OF FAN ELECTRICAL DEMAND	9.3	1.36
5		SUMMATION OF FAN ELECTRICAL DEMAND	9.6	1.41

Sub Total			47.6	6.99
-----------	--	--	------	------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Miscellaneous

Lights			166.1	24.43
Base Utilities			0.0	0.00
Misc Equipment			147.6	21.70
Sub Total			313.7	46.13

Grand Total			680.1	100.00
-------------	--	--	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
BLDG G101, ECO #6

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 120,182
ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	9,332.1	732,370.8	5.3	9.9	866,477.4	7.4
Primary Cooling						
Compressor	261,833.2	0.0	0.0	11.6	2,681,178.3	22.9
Tower/Cond Fans	31,497.1	0.0	0.0	1.4	322,531.4	2.8
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	4,547.7	0.0	0.0	0.2	46,568.5	0.4
Auxiliary						
Supply Fans	416,647.3	0.0	0.0	18.4	4,266,477.5	36.4
Circulation Pumps	158,049.8	0.0	0.0	7.0	1,618,433.7	13.8
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	574,697.1	0.0	0.0	25.4	5,884,911.5	50.2
Lighting	729,764.0	0.0	0.0	32.2	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	19.4	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	2,050,905.1	732,370.8	5.3	100.0	21,772,232.0	183.2

^R

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #7

----- M O N T H L Y E N E R G Y C O N S U M P T I O N -----

Month	ELEC On Peak (kWh)	DEMAND On Peak (kW)	GAS On Peak (Therm)	WATER (1000 Gl)	GAS DMND On Peak (Thrm/hr)
Jan	131,091	392	1,021	1	13
Feb	118,424	392	905	1	14
March	134,239	388	246	0	11
April	123,129	361	18	0	4
May	188,817	613	0	0	0
June	211,427	679	0	0	0
July	206,155	667	0	0	0
Aug	216,005	670	0	0	0
Sept	186,013	633	0	0	0
Oct	167,093	540	0	0	0
Nov	123,582	388	119	0	8
Dec	127,646	392	595	1	13
Total	1,933,622	679	2,904	3	14

Building Energy Consumption = 57,328 (Btu/Sq Ft/Year)
Source Energy Consumption = 167,297 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #7

----- E Q U I P M E N T E N E R G Y C O N S U M P T I O N -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S													
	ELEC	0	0	0	0	5199	9152	8961	9099	6179	1914	0	0	40,504
	PK	0.0	0.0	0.0	0.0	33.1	40.4	38.9	39.0	32.8	19.2	0.0	0.0	40.4
1	EQ5200													
	ELEC	0	0	0	0	626	1158	1141	1149	760	183	0	0	5,018
	PK	0.0	0.0	0.0	0.0	3.7	4.5	4.4	4.4	3.9	2.7	0.0	0.0	4.5
1	EQ5001													
	ELEC	0	0	0	0	4008	5256	5431	5431	4599	1569	0	0	26,295
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313													
	ELEC	0	0	0	0	165	216	223	223	189	65	0	0	1,081
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S													
	ELEC	0	0	0	0	3235	5140	5076	5242	3688	1702	0	0	24,084
	PK	0.0	0.0	0.0	0.0	18.8	22.4	22.0	22.2	19.0	12.0	0.0	0.0	22.4

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #7

2	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	387	647	642	657	452	159	0	0	2,943
	PK	0.0	0.0	0.0	0.0	2.1	2.5	2.5	2.5	2.2	1.7	0.0	0.0	2.5
2	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	1569	1656	1711	1711	1656	658	0	0	8,961
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313		CONTROLS											
	ELEC	0	0	0	0	205	216	223	223	216	86	0	0	1,169
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L		AIR-CLD COND COMP 35-60 TONS											
	ELEC	0	0	0	0	5299	8166	7390	7967	5414	2056	0	0	36,291
	PK	0.0	0.0	0.0	0.0	39.7	43.0	41.6	41.6	37.0	24.4	0.0	0.0	43.0
3	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	568	989	908	954	610	190	0	0	4,219
	PK	0.0	0.0	0.0	0.0	5.0	5.0	5.0	5.0	4.5	3.2	0.0	0.0	5.0
3	EQ5313		CONTROLS											
	ELEC	0	0	0	0	79	79	72	83	72	52	0	0	437
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L		AIR-CLD RECIP >55 TONS											
	ELEC	0	0	0	0	18952	31453	29399	30591	21259	11751	0	0	143,406
	PK	0.0	0.0	0.0	0.0	110.0	150.8	142.5	145.0	125.2	73.9	0.0	0.0	150.8
4	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	2117	3821	3617	3739	2489	963	0	0	16,746
	PK	0.0	0.0	0.0	0.0	13.6	17.5	17.1	17.3	15.2	10.2	0.0	0.0	17.5
4	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	15044	0	0	92,524
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313		CONTROLS											
	ELEC	0	0	0	0	223	216	223	223	216	214	0	0	1,315
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	609	551	667	580	638	638	580	667	580	638	580	580	7,303
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371		FAN COIL SUPPLY FAN											
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371		FAN COIL SUPPLY FAN											

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #7

	ELEC	2335	2113	2558	2224	2447	2447	2224	2558	2224	2447	2224	2224	28,024
	PK	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
5	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	7138	6447	7138	6908	7138	6908	7138	7138	6908	7138	6908	7138	84,042
	PK	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
1	EQ2001		GAS FIRE TUBE HOT WATER											
	GAS	477	444	157	18	0	0	0	0	0	0	59	315	1,481
	PK	9.0	8.4	7.3	4.4	0.0	0.0	0.0	0.0	0.0	0.0	7.3	7.3	9.0
1	EQ5020		HEAT WATER CIRC. PUMP C.V.											
	ELEC	1583	1393	739	84	0	0	0	0	0	0	253	1034	5,085
	PK	21.1	21.1	21.1	21.1	0.0	0.0	0.0	0.0	0.0	0.0	21.1	21.1	21.1
1	EQ5240		BOILER FORCED DRAFT FAN											
	ELEC	394	347	184	21	0	0	0	0	0	0	63	257	1,265
	PK	5.3	5.3	5.3	5.3	0.0	0.0	0.0	0.0	0.0	0.0	5.3	5.3	5.3
1	EQ5307		BOILER CONTROLS											
	ELEC	38	33	18	2	0	0	0	0	0	0	6	25	120
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
2	EQ2002		GAS FIRE TUBE STEAM											
	GAS	544	461	88	0	0	0	0	0	0	0	49	280	1,423
	PK	5.8	5.9	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.2	5.9
2	EQ5020		HEAT WATER CIRC. PUMP C.V.											
	ELEC	750	667	193	0	0	0	0	0	0	0	161	600	2,371
	PK	2.3	2.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.3	2.3
2	EQ5240		BOILER FORCED DRAFT FAN											
	ELEC	192	171	50	0	0	0	0	0	0	0	41	154	608
	PK	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6
2	EQ5307		BOILER CONTROLS											
	ELEC	163	145	42	0	0	0	0	0	0	0	35	131	516
	PK	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
2	EQ5061		CONDENSATE RETURN PUMP											
	ELEC	9	8	2	0	0	0	0	0	0	0	2	7	29
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5406		MAKE-UP WATER											
	WATER	1	1	0	0	0	0	0	0	0	0	0	1	3
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600
PAGE 5

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #7

----- UTILITY PEAK CHECKSUMS -----

Utility ELECTRIC DEMAND

Peak Value 679.2 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Percent Of Tot (%)
Cooling Equipment				
1	EQ1121S	AIR-CLD RECIP 20-35 TONS	52.4	7.71
2	EQ1120S	AIR-CLD RECIP <20 TONS	27.5	4.05
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	48.3	7.11
4	EQ1122L	AIR-CLD RECIP >55 TONS	189.7	27.93
Sub Total			317.9	46.81
Sub Total			0.0	0.00
Air Moving Equipment				
1	SUMMATION OF FAN ELECTRICAL DEMAND		22.7	3.34
2	SUMMATION OF FAN ELECTRICAL DEMAND		2.4	0.36
3	SUMMATION OF FAN ELECTRICAL DEMAND		3.6	0.53
4	SUMMATION OF FAN ELECTRICAL DEMAND		9.3	1.36
5	SUMMATION OF FAN ELECTRICAL DEMAND		9.6	1.41
Sub Total			47.6	7.00
Sub Total			0.0	0.00
Miscellaneous				
Lights			166.1	24.46
Base Utilities			0.0	0.00
Misc Equipment			147.6	21.73
Sub Total			313.7	46.19
Grand Total			679.2	100.00

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
BLDG G101, ECO #7

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 120,182
ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	2,537.7	290,369.6	3.1	4.3	331,638.3	2.8
Primary Cooling						
Compressor	244,284.7	0.0	0.0	12.1	2,501,481.0	21.3
Tower/Cond Fans	28,926.5	0.0	0.0	1.4	296,208.3	2.5
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	4,002.0	0.0	0.0	0.2	40,980.6	0.3
Auxiliary						
Supply Fans	349,637.5	0.0	0.0	17.3	3,580,296.2	30.5
Circulation Pumps	135,235.4	0.0	0.0	6.7	1,384,813.6	11.8
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	484,872.9	0.0	0.0	24.0	4,965,109.5	42.3
Lighting	729,764.0	0.0	0.0	36.2	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	21.8	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	1,933,621.6	290,369.6	3.1	100.0	20,105,984.0	169.0

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #12

----- M O N T H L Y E N E R G Y C O N S U M P T I O N -----

Month	ELEC	DEMAND	GAS	WATER	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)		On Peak (Thrm/hr)
Jan	130,442	392	822	1	12
Feb	118,332	392	743	1	13
March	133,540	388	130	0	8
April	123,021	361	0	0	0
May	175,694	530	0	0	0
June	194,215	625	0	0	0
July	189,689	610	0	0	0
Aug	197,836	613	0	0	0
Sept	171,863	586	0	0	0
Oct	159,907	489	0	0	0
Nov	123,352	361	73	0	8
Dec	127,415	392	448	1	11
Total	1,845,306	625	2,215	3	13

Building Energy Consumption = 54,247 (Btu/Sq Ft/Year)
Source Energy Consumption = 159,169 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #12

----- E Q U I P M E N T E N E R G Y C O N S U M P T I O N -----

Ref Num	Equip Code	----- Monthly Consumption -----												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTW20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S													
	ELEC	0	0	0	0	4514	8304	8069	8198	5376	1561	0	0	36,022
	PK	0.0	0.0	0.0	0.0	31.7	38.8	37.3	37.4	31.3	18.5	0.0	0.0	38.8
1	EQ5200													
	ELEC	0	0	0	0	550	1052	1029	1038	668	154	0	0	4,491
	PK	0.0	0.0	0.0	0.0	3.5	4.3	4.2	4.3	3.7	2.6	0.0	0.0	4.3
1	EQ5001													
	ELEC	0	0	0	0	3876	5256	5431	5431	4088	1212	0	0	25,295
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313													
	ELEC	0	0	0	0	159	216	223	223	168	50	0	0	1,039
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S													
	ELEC	0	0	0	0	2916	4767	4683	4847	3328	1555	0	0	22,096
	PK	0.0	0.0	0.0	0.0	18.1	21.7	21.3	21.4	18.4	11.8	0.0	0.0	21.7

2	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	352	600	592	608	411	147	0	0	2,709
	PK	0.0	0.0	0.0	0.0	2.0	2.4	2.4	2.4	2.2	1.6	0.0	0.0	2.4
2	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	1313	1656	1711	1711	1587	596	0	0	8,574
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313	CONTROLS												
	ELEC	0	0	0	0	171	216	223	223	207	78	0	0	1,118
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS												
	ELEC	0	0	0	0	1031	3280	2548	2697	1315	0	0	0	10,871
	PK	0.0	0.0	0.0	0.0	14.9	29.4	27.2	27.2	24.8	15.8	0.0	0.0	29.4
3	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	136	407	324	340	169	0	0	0	1,375
	PK	0.0	0.0	0.0	0.0	1.9	3.4	3.3	3.3	3.0	2.1	0.0	0.0	3.4
3	EQ5313	CONTROLS												
	ELEC	0	0	0	0	27	69	56	63	34	0	0	0	248
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L	AIR-CLD RECIP >55 TONS												
	ELEC	0	0	0	0	12857	22253	20909	20999	14440	8784	0	0	100,241
	PK	0.0	0.0	0.0	0.0	77.9	118.8	108.8	111.0	97.9	39.5	0.0	0.0	118.8
4	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	1382	2661	2531	2525	1642	689	0	0	11,430
	PK	0.0	0.0	0.0	0.0	9.7	13.6	13.0	13.2	11.9	5.3	0.0	0.0	13.6
4	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	14390	0	0	91,869
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313	CONTROLS												
	ELEC	0	0	0	0	223	216	223	223	216	205	0	0	1,306
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	609	551	667	580	638	638	580	667	580	638	580	580	7,303
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371	FAN COIL SUPPLY FAN												
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371	FAN COIL SUPPLY FAN												

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #12

	ELEC	2335	2113	2558	2224	2447	2447	2224	2558	2224	2447	2224	2224	28,024
	PK	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
5	EQ4003		FC CENTRIF. FAN C.V.											
	ELEC	7138	6447	7138	6908	7138	6908	7138	7138	6908	7138	6908	7138	84,042
	PK	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
1	EQ2001		GAS FIRE TUBE HOT WATER											
	GAS	380	373	83	0	0	0	0	0	0	0	56	244	1,137
	PK	8.4	7.3	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	7.0	8.4
1	EQ5020		HEAT WATER CIRC. PUMP C.V.											
	ELEC	1139	1393	253	0	0	0	0	0	0	0	169	971	3,925
	PK	21.1	21.1	21.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.1	21.1	21.1
1	EQ5240		BOILER FORCED DRAFT FAN											
	ELEC	283	347	63	0	0	0	0	0	0	0	42	242	976
	PK	5.3	5.3	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	5.3	5.3
1	EQ5307		BOILER CONTROLS											
	ELEC	27	33	6	0	0	0	0	0	0	0	4	23	93
	PK	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
2	EQ2002		GAS FIRE TUBE STEAM											
	GAS	441	370	47	0	0	0	0	0	0	0	17	203	1,078
	PK	5.4	5.5	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	4.4	5.5
2	EQ5020		HEAT WATER CIRC. PUMP C.V.											
	ELEC	692	605	138	0	0	0	0	0	0	0	78	499	2,013
	PK	2.3	2.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.3	2.3
2	EQ5240		BOILER FORCED DRAFT FAN											
	ELEC	177	155	35	0	0	0	0	0	0	0	20	128	516
	PK	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6
2	EQ5307		BOILER CONTROLS											
	ELEC	150	132	30	0	0	0	0	0	0	0	17	108	438
	PK	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
2	EQ5061		CONDENSATE RETURN PUMP											
	ELEC	8	7	2	0	0	0	0	0	0	0	1	6	24
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	EQ5406		MAKE-UP WATER											
	WATER	1	1	0	0	0	0	0	0	0	0	0	1	3
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #12

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 625.0 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Percnt Of Tot (%)
----------------------	------------------------	-----------------------	---------------------------	-------------------------

Cooling Equipment

1	EQ1121S	AIR-CLD RECIP 20-35 TONS	50.6	8.10
2	EQ1120S	AIR-CLD RECIP <20 TONS	26.7	4.28
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	32.6	5.22
4	EQ1122L	AIR-CLD RECIP >55 TONS	153.8	24.60

Sub Total			263.8	42.20
-----------	--	--	-------	-------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Air Moving Equipment

1		SUMMATION OF FAN ELECTRICAL DEMAND	22.7	3.63
2		SUMMATION OF FAN ELECTRICAL DEMAND	2.4	0.39
3		SUMMATION OF FAN ELECTRICAL DEMAND	3.6	0.57
4		SUMMATION OF FAN ELECTRICAL DEMAND	9.3	1.48
5		SUMMATION OF FAN ELECTRICAL DEMAND	9.6	1.53

Sub Total			47.6	7.61
-----------	--	--	------	------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Miscellaneous

Lights			166.1	26.58
Base Utilities			0.0	0.00
Misc Equipment			147.6	23.61
Sub Total			313.7	50.19

Grand Total			625.0	100.00
-------------	--	--	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
 BLDG G101, ECO #12

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
 Gross Conditioned Floor Area (sqft)..... 120,182
 ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	2,047.1	221,515.1	2.7	3.5	254,136.7	2.2
Primary Cooling						
Compressor	169,230.7	0.0	0.0	8.9	1,732,926.5	14.8
Tower/Cond Fans	20,005.4	0.0	0.0	1.0	204,855.4	1.7
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	3,712.2	0.0	0.0	0.2	38,013.0	0.3
Auxiliary						
Supply Fans	349,637.5	0.0	0.0	18.3	3,580,296.2	30.5
Circulation Pumps	131,675.5	0.0	0.0	6.9	1,348,360.3	11.5
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	481,313.0	0.0	0.0	25.2	4,928,656.5	42.0
Lighting	729,764.0	0.0	0.0	38.2	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	23.0	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	1,845,306.4	221,515.1	2.7	100.0	19,129,154.0	160.7

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #13

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	WATER	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)		On Peak (Thrm/hr)
Jan	149,276	361	2,067	1	10
Feb	136,359	361	2,007	1	9
March	147,508	361	521	1	6
April	132,896	361	10	0	2
May	200,914	561	0	0	0
June	225,132	630	0	0	0
July	221,997	623	0	0	0
Aug	230,656	621	0	0	0
Sept	199,198	594	0	0	0
Oct	175,731	512	0	0	0
Nov	135,975	361	319	0	5
Dec	144,562	361	1,413	1	7
Total	2,100,206	630	6,336	5	10

Building Energy Consumption = 64,915 (Btu/Sq Ft/Year)
Source Energy Consumption = 184,497 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #13

----- E Q U I P M E N T E N E R G Y C O N S U M P T I O N -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	61547	55625	63698	59214	62622	61366	60471	63698	59214	62622	59214	60471	729,764
	PK	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1	166.1
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S													
		AIR-CLD RECIP 20-35 TONS												
	ELEC	0	0	0	0	5199	9152	8961	9099	6179	1914	0	0	40,504
	PK	0.0	0.0	0.0	0.0	33.1	40.4	38.9	39.0	32.8	19.2	0.0	0.0	40.4
1	EQ5200													
		CONDENSER FANS												
	ELEC	0	0	0	0	626	1158	1141	1149	760	183	0	0	5,018
	PK	0.0	0.0	0.0	0.0	3.7	4.5	4.4	4.4	3.9	2.7	0.0	0.0	4.5
1	EQ5001													
		CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	4008	5256	5431	5431	4599	1569	0	0	26,295
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313													
		CONTROLS												
	ELEC	0	0	0	0	165	216	223	223	189	65	0	0	1,081
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S													
		AIR-CLD RECIP <20 TONS												
	ELEC	0	0	0	0	3235	5140	5076	5242	3688	1702	0	0	24,084
	PK	0.0	0.0	0.0	0.0	18.8	22.4	22.0	22.2	19.0	12.0	0.0	0.0	22.4

2	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	387	647	642	657	452	159	0	0	2,943
	PK	0.0	0.0	0.0	0.0	2.1	2.5	2.5	2.5	2.2	1.7	0.0	0.0	2.5
2	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	1569	1656	1711	1711	1656	658	0	0	8,961
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313	CONTROLS												
	ELEC	0	0	0	0	205	216	223	223	216	86	0	0	1,169
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS												
	ELEC	0	0	0	0	6062	10762	10633	10668	7088	1862	0	0	47,075
	PK	0.0	0.0	0.0	0.0	35.2	43.0	41.6	41.6	37.0	24.4	0.0	0.0	43.0
3	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	731	1346	1348	1336	875	180	0	0	5,816
	PK	0.0	0.0	0.0	0.0	4.2	5.0	5.0	5.0	4.5	3.2	0.0	0.0	5.0
3	EQ5313	CONTROLS												
	ELEC	0	0	0	0	163	216	223	223	180	61	0	0	1,067
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L	AIR-CLD RECIP >55 TONS												
	ELEC	0	0	0	0	13280	22661	21930	22064	14941	7059	0	0	101,935
	PK	0.0	0.0	0.0	0.0	115.8	122.5	116.8	117.0	104.2	61.8	0.0	0.0	122.5
4	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	1374	2728	2649	2628	1650	524	0	0	11,552
	PK	0.0	0.0	0.0	0.0	14.0	14.5	14.4	14.4	13.1	7.6	0.0	0.0	14.5
4	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	13082	12660	13082	13082	12660	11774	0	0	76,340
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313	CONTROLS												
	ELEC	0	0	0	0	186	180	186	186	180	167	0	0	1,085
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
5	EQ1750	AIR-CLD CTV ICE-CHILL H2O												
	ELEC	4039	3724	4123	3990	14237	17436	16896	17936	14951	11362	3911	4123	116,729
	PK	59.6	59.6	59.6	59.6	140.2	145.5	144.8	144.4	140.2	140.2	140.2	59.6	145.5
5	EQ5205	CONDENSER FANS												
	ELEC	10	9	10	10	14	14	14	15	14	12	10	10	142
	PK	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
5	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	EQ5309	CONTROLS												

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #13

	ELEC	124	112	124	120	297	292	299	302	291	300	120	124	2,505
	PK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	1797	1623	1797	1739	1797	1739	1797	1739	1797	1739	1797	1739	21,155
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371	FAN COIL SUPPLY FAN												
	ELEC	2658	2401	2658	2572	2658	2572	2658	2572	2658	2572	2658	2572	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371	FAN COIL SUPPLY FAN												
	ELEC	6895	6228	6895	6672	6895	6672	6895	6672	6895	6672	6895	6672	81,182
	PK	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
5	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	7138	6447	7138	6908	7138	6908	7138	6908	7138	6908	7138	6908	84,042
	PK	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
1	EQ2001	GAS FIRE TUBE HOT WATER												
	GAS	890	940	266	6	0	0	0	0	0	0	184	689	2,974
	PK	5.7	4.0	2.8	1.4	0.0	0.0	0.0	0.0	0.0	0.0	2.6	3.3	5.7
1	EQ5020	HEAT WATER CIRC. PUMP C.V.												
	ELEC	7744	7976	3186	84	0	0	0	0	0	0	2194	5971	27,156
	PK	21.1	21.1	21.1	21.1	0.0	0.0	0.0	0.0	0.0	0.0	21.1	21.1	21.1
1	EQ5240	BOILER FORCED DRAFT FAN												
	ELEC	1927	1985	793	21	0	0	0	0	0	0	546	1486	6,757
	PK	5.3	5.3	5.3	5.3	0.0	0.0	0.0	0.0	0.0	0.0	5.3	5.3	5.3
1	EQ5307	BOILER CONTROLS												
	ELEC	183	189	76	2	0	0	0	0	0	0	52	142	644
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
2	EQ2002	GAS FIRE TUBE STEAM												
	GAS	1177	1067	254	4	0	0	0	0	0	0	134	724	3,362
	PK	5.4	5.5	3.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	2.8	4.5	5.5
2	EQ5020	HEAT WATER CIRC. PUMP C.V.												
	ELEC	1035	1021	483	28	0	0	0	0	0	0	345	929	3,841
	PK	2.3	2.3	2.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.3	2.3
2	EQ5240	BOILER FORCED DRAFT FAN												
	ELEC	265	262	124	7	0	0	0	0	0	0	88	238	985
	PK	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6
2	EQ5307	BOILER CONTROLS												
	ELEC	225	222	105	6	0	0	0	0	0	0	75	202	835
	PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5

V 600
PAGE 5

PAGE 5

[illegible]

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600
PAGE

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #13

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 630.4 (kW)
Yearly Time of Peak 12 (hr) 6 (mo)

Hour 12 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Percnt Of Tot (%)
Cooling Equipment				
1	EQ1121S	AIR-CLD RECIP 20-35 TONS	44.3	7.03
2	EQ1120S	AIR-CLD RECIP <20 TONS	24.7	3.92
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	41.6	6.60
4	EQ1122L	AIR-CLD RECIP >55 TONS	158.4	25.13
Sub Total			269.1	42.69
Sub Total			0.0	0.00
Air Moving Equipment				
1	SUMMATION OF FAN ELECTRICAL DEMAND		22.7	3.60
2	SUMMATION OF FAN ELECTRICAL DEMAND		2.4	0.38
3	SUMMATION OF FAN ELECTRICAL DEMAND		3.6	0.57
4	SUMMATION OF FAN ELECTRICAL DEMAND		9.3	1.47
5	SUMMATION OF FAN ELECTRICAL DEMAND		9.6	1.52
Sub Total			47.6	7.55
Sub Total			0.0	0.00
Miscellaneous				
Lights			166.1	26.36
Base Utilities			0.0	0.00
Misc Equipment			147.6	23.41
Sub Total			313.7	49.77
Grand Total			630.4	100.00

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

January

Hour	Design		Design			
	OADB (F)	OAWB (F)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
1	42.7	35.4	0.0	0.0	0.0	743
2	41.8	34.7	0.0	14.9	24.5	751
3	41.1	34.4	0.0	0.0	0.0	743
4	40.6	34.0	0.0	14.9	24.5	751
5	40.4	34.0	0.0	0.0	0.0	743
6	40.8	34.4	0.0	14.9	24.5	751
7	41.6	35.0	0.0	0.0	0.0	743
8	43.2	36.5	0.0	14.9	24.5	751
9	45.5	38.5	0.0	0.0	0.0	751
10	48.1	40.4	0.0	0.0	0.0	751
11	51.0	42.2	0.0	0.0	0.0	751
12	53.8	43.8	0.0	0.0	0.0	751
13	55.9	45.0	0.0	0.0	0.0	743
14	57.3	45.5	0.0	0.0	0.0	736
15	57.8	45.6	0.0	0.0	0.0	729
16	57.3	44.8	0.0	0.0	0.0	721
17	56.1	43.9	0.0	0.0	0.0	721
18	54.2	42.7	0.0	0.0	0.0	721
19	51.9	41.6	0.0	0.0	0.0	721
20	49.6	40.2	0.0	0.0	0.0	721
21	47.7	39.1	0.0	0.0	0.0	721
22	46.0	37.9	0.0	0.0	0.0	721
23	44.6	36.8	0.0	0.0	0.0	721
24	43.6	36.1	0.0	0.0	0.0	721

Hour	Typical		Weekday				Saturday			
	OADB (F)	OAWB (F)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
1	33.4	30.4	0.0	36.8	54.7	751	0.0	43.9	59.6	751
2	32.1	29.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	31.7	29.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	31.9	29.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	32.6	30.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	33.6	31.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	35.0	32.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	36.6	34.4	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	38.5	36.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	40.4	37.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	42.3	38.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	44.2	39.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	45.8	40.5	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	47.2	41.1	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	48.2	41.6	0.0	0.0	0.0	721	0.0	0.0	0.0	721

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB (F)	QAWB (F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
16	48.9	41.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	49.1	41.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	48.7	41.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	47.4	41.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	45.5	40.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	43.1	38.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	40.4	36.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	37.7	34.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	35.3	32.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB (F)	QAWB (F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	33.4	30.4	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	32.1	29.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	31.7	29.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	31.9	29.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	32.6	30.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	33.6	31.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	35.0	32.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	36.6	34.4	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	38.5	36.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	40.4	37.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	42.3	38.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	44.2	39.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	45.8	40.5	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	47.2	41.1	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	48.2	41.6	0.0	0.0	0.0	721	0.0	0.0	0.0	721
16	48.9	41.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	49.1	41.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	48.7	41.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	47.4	41.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	45.5	40.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	43.1	38.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	40.4	36.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	37.7	34.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	35.3	32.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

February

Hour	Design		Design			
	OADB (F)	CAWB (F)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
1	42.8	35.6	0.0	43.9	59.6	751
2	42.0	34.9	0.0	0.0	0.0	743
3	41.4	34.5	0.0	14.9	24.5	751
4	41.0	34.2	0.0	0.0	0.0	743
5	40.8	34.0	0.0	14.9	24.5	751
6	41.1	34.4	0.0	0.0	0.0	743
7	41.9	35.0	0.0	14.9	24.5	751
8	43.3	36.5	0.0	0.0	0.0	743
9	45.3	38.2	0.0	0.0	0.0	743
10	47.7	39.5	0.0	0.0	0.0	743
11	50.3	41.3	0.0	0.0	0.0	743
12	52.8	42.5	0.0	0.0	0.0	743
13	54.7	43.4	0.0	0.0	0.0	736
14	55.9	44.0	0.0	0.0	0.0	729
15	56.4	44.2	0.0	0.0	0.0	721
16	55.9	43.6	0.0	0.0	0.0	714
17	54.8	42.6	0.0	0.0	0.0	714
18	53.1	41.4	0.0	0.0	0.0	714
19	51.1	40.4	0.0	0.0	0.0	714
20	49.1	39.4	0.0	0.0	0.0	714
21	47.4	38.5	0.0	0.0	0.0	714
22	45.8	37.6	0.0	0.0	0.0	714
23	44.5	36.9	0.0	0.0	0.0	714
24	43.6	36.1	0.0	0.0	0.0	714

Hour	Typical		Weekday				Saturday			
	OADB (F)	CAWB (F)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
1	37.5	34.5	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	36.0	33.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	34.7	31.8	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	33.6	30.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	32.8	30.1	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	32.2	29.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	32.1	29.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	32.5	30.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	33.9	31.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	36.0	33.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	38.5	34.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	41.3	36.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	43.8	38.1	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	45.9	39.5	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	47.2	40.4	0.0	0.0	0.0	721	0.0	0.0	0.0	721

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling Load	Chiller Load	Chiller Demand	Storage Capacity	Cooling Load	Chiller Load	Chiller Demand	Storage Capacity
	OADB (F)	QAWB (F)								
16	47.7	40.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	47.5	40.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	47.0	39.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	46.2	39.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	45.1	39.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	43.8	39.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	42.3	38.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	40.7	37.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	39.1	35.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714

Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling Load	Chiller Load	Chiller Demand	Storage Capacity	Cooling Load	Chiller Load	Chiller Demand	Storage Capacity
	OADB (F)	QAWB (F)								
1	37.5	34.5	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	36.0	33.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	34.7	31.8	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	33.6	30.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	32.8	30.1	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	32.2	29.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	32.1	29.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	32.5	30.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	33.9	31.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	36.0	33.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	38.5	34.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	41.3	36.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	43.8	38.1	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	45.9	39.5	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	47.2	40.4	0.0	0.0	0.0	721	0.0	0.0	0.0	721
16	47.7	40.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	47.5	40.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	47.0	39.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	46.2	39.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	45.1	39.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	43.8	39.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	42.3	38.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	40.7	37.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	39.1	35.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

March

Hour	Design		Design			Storage Capacity (Ton-Hr)
	OADB	QAWB	Cooling Load	Chiller Load	Chiller Demand	
	(F)	(F)	(Ton)	(Ton)	(kW)	
1	51.8	42.9	0.0	43.9	59.6	751
2	50.8	42.1	0.0	0.0	0.0	743
3	50.0	41.8	0.0	14.9	24.5	751
4	49.3	41.1	0.0	0.0	0.0	743
5	49.1	41.1	0.0	14.9	24.5	751
6	49.5	41.6	0.0	0.0	0.0	743
7	50.6	42.7	0.0	14.9	24.5	751
8	52.5	44.3	0.0	0.0	0.0	743
9	55.2	46.4	0.0	0.0	0.0	743
10	58.3	48.5	0.0	0.0	0.0	743
11	61.8	50.3	0.0	0.0	0.0	743
12	65.1	51.9	0.0	0.0	0.0	743
13	67.6	53.4	0.0	0.0	0.0	736
14	69.3	53.9	0.0	0.0	0.0	729
15	69.9	53.8	0.0	0.0	0.0	721
16	69.3	53.1	0.0	0.0	0.0	714
17	67.8	51.8	0.0	0.0	0.0	714
18	65.6	50.2	0.0	0.0	0.0	714
19	62.9	48.9	0.0	0.0	0.0	714
20	60.2	47.7	0.0	0.0	0.0	714
21	57.9	46.5	0.0	0.0	0.0	714
22	55.8	45.3	0.0	0.0	0.0	714
23	54.1	44.4	0.0	0.0	0.0	714
24	52.9	43.7	0.0	0.0	0.0	714

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling Load	Chiller Load	Chiller Demand	Storage Capacity	Cooling Load	Chiller Load	Chiller Demand	Storage Capacity
	(F)	(F)	(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
1	45.4	41.6	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	43.3	39.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	41.6	38.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	40.6	37.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	40.2	37.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	40.6	37.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	41.6	39.0	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	43.3	40.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	45.4	42.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	47.9	44.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	50.6	45.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	53.3	46.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	55.8	48.5	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	58.0	49.6	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	59.6	50.3	0.0	0.0	0.0	721	0.0	0.0	0.0	721

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB (F)	QAWB (F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
16	60.7	50.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	61.0	50.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	60.7	50.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	59.6	50.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	58.0	50.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	55.8	49.4	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	53.3	47.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	50.6	45.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	47.9	43.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714

Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB (F)	QAWB (F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	45.4	41.6	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	43.3	39.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	41.6	38.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	40.6	37.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	40.2	37.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	40.6	37.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	41.6	39.0	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	43.3	40.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	45.4	42.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	47.9	44.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	50.6	45.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	53.3	46.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	55.8	48.5	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	58.0	49.6	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	59.6	50.3	0.0	0.0	0.0	721	0.0	0.0	0.0	721
16	60.7	50.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	61.0	50.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	60.7	50.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	59.6	50.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	58.0	50.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	55.8	49.4	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	53.3	47.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	50.6	45.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	47.9	43.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

April

Hour	Design		Design			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	62.6	52.5	0.0	43.9	59.6	751
2	61.6	52.1	0.0	0.0	0.0	743
3	60.9	51.6	0.0	14.9	24.5	751
4	60.3	51.2	0.0	0.0	0.0	743
5	60.1	51.3	0.0	14.9	24.5	751
6	60.5	51.9	0.0	0.0	0.0	743
7	61.4	53.0	0.0	14.9	24.5	751
8	63.2	54.5	0.0	0.0	0.0	743
9	65.7	55.8	0.0	0.0	0.0	743
10	68.6	57.1	0.0	0.0	0.0	743
11	71.9	58.6	0.0	0.0	0.0	743
12	75.0	60.3	0.0	0.0	0.0	743
13	77.4	61.5	0.0	0.0	0.0	736
14	78.9	62.2	0.0	0.0	0.0	729
15	79.5	62.5	0.0	0.0	0.0	721
16	78.9	61.8	0.0	0.0	0.0	714
17	77.5	60.3	0.0	0.0	0.0	714
18	75.4	59.1	0.0	0.0	0.0	714
19	72.9	57.3	0.0	0.0	0.0	714
20	70.4	56.5	0.0	0.0	0.0	714
21	68.2	55.7	0.0	0.0	0.0	714
22	66.3	55.0	0.0	0.0	0.0	714
23	64.7	54.0	0.0	0.0	0.0	714
24	63.6	53.2	0.0	0.0	0.0	714

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	57.7	53.9	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	55.9	52.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	54.2	51.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	52.9	50.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	51.9	49.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	51.2	49.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	51.0	49.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	51.6	49.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	53.3	50.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	55.9	51.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	59.0	53.4	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	62.4	55.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	65.5	57.7	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	68.1	59.4	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	69.8	60.7	0.0	0.0	0.0	721	0.0	0.0	0.0	721

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	Typical		----- Weekday -----				----- Saturday -----			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
16	70.4	60.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	70.2	60.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	69.5	60.1	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	68.5	59.4	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	67.2	59.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	65.5	59.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	63.7	58.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	61.7	57.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	59.7	55.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714

Hour	Typical		----- Sunday -----				----- Monday -----			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
1	57.7	53.9	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	55.9	52.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	54.2	51.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	52.9	50.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	51.9	49.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	51.2	49.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	51.0	49.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	51.6	49.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	53.3	50.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	55.9	51.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	59.0	53.4	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	62.4	55.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	65.5	57.7	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	68.1	59.4	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	69.8	60.7	0.0	0.0	0.0	721	0.0	0.0	0.0	721
16	70.4	60.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	70.2	60.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	69.5	60.1	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	68.5	59.4	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	67.2	59.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	65.5	59.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	63.7	58.8	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	61.7	57.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	59.7	55.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

May

Hour	Design		Design			
	OADB	OAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	70.8	59.3	0.0	43.9	59.6	751
2	69.8	58.5	0.0	0.0	0.0	743
3	69.0	58.2	0.0	14.9	24.5	751
4	68.4	58.1	0.0	0.0	0.0	743
5	68.2	58.0	0.0	14.9	24.5	751
6	68.6	58.5	0.0	0.0	0.0	743
7	69.6	59.5	0.0	14.9	24.5	751
8	71.3	60.6	0.0	0.0	0.0	743
9	73.9	61.5	0.0	0.0	0.0	743
10	76.8	62.7	0.0	0.0	0.0	743
11	80.1	63.9	0.0	0.0	0.0	743
12	83.2	65.4	0.0	0.0	0.0	743
13	85.6	66.5	81.3	0.0	0.0	655
14	87.1	67.1	105.2	0.0	0.0	543
15	87.7	67.2	112.1	0.0	0.0	425
16	87.1	66.5	111.9	0.0	0.0	309
17	85.8	65.1	0.0	0.0	0.0	309
18	83.6	63.9	0.0	0.0	0.0	309
19	81.1	62.4	0.0	0.0	0.0	309
20	78.6	61.6	0.0	0.0	0.0	309
21	76.4	61.8	0.0	0.0	0.0	309
22	74.5	60.9	0.0	0.0	0.0	309
23	72.9	60.3	0.0	0.0	0.0	309
24	71.7	59.9	0.0	0.0	0.0	309

Hour	Typical		Weekday				Saturday			
	OADB	OAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	66.6	62.3	0.0	125.0	140.2	431	0.0	125.0	140.2	564
2	64.5	60.4	0.0	125.0	140.2	552	0.0	125.0	140.2	684
3	62.7	59.1	0.0	125.0	140.2	671	0.0	74.3	84.4	751
4	61.2	58.1	0.0	86.3	96.0	751	0.0	0.0	0.0	743
5	60.0	57.1	0.0	0.0	0.0	743	0.0	14.9	24.5	751
6	59.3	56.6	0.0	14.9	24.5	751	0.0	0.0	0.0	743
7	59.0	56.5	0.0	0.0	0.0	743	0.0	14.9	24.5	751
8	59.5	56.6	0.0	14.9	24.5	751	0.0	0.0	0.0	743
9	60.9	56.6	0.0	0.0	0.0	751	0.0	0.0	0.0	743
10	63.0	57.2	0.0	0.0	0.0	751	0.0	0.0	0.0	743
11	65.7	58.1	0.0	0.0	0.0	751	0.0	0.0	0.0	743
12	68.7	59.8	0.0	0.0	0.0	751	0.0	0.0	0.0	743
13	71.7	61.6	50.6	0.0	0.0	693	19.8	0.0	0.0	716
14	74.5	63.4	71.1	0.0	0.0	615	24.1	0.0	0.0	685
15	76.6	64.8	79.7	0.0	0.0	529	32.1	0.0	0.0	646

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	Typical		Weekday				Saturday			
	OADB	OAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
16	78.0	65.6	80.0	0.0	0.0	444	38.1	0.0	0.0	601
17	78.5	65.6	0.0	0.0	0.0	444	0.0	0.0	0.0	601
18	78.2	65.8	0.0	0.0	0.0	444	0.0	0.0	0.0	601
19	77.5	65.6	0.0	0.0	0.0	444	0.0	0.0	0.0	601
20	76.3	66.1	0.0	0.0	0.0	444	0.0	0.0	0.0	601
21	74.8	67.2	0.0	0.0	0.0	444	0.0	0.0	0.0	601
22	73.0	66.4	0.0	0.0	0.0	444	0.0	0.0	0.0	601
23	70.9	65.4	0.0	0.0	0.0	444	0.0	0.0	0.0	601
24	68.7	64.0	0.0	0.0	0.0	444	0.0	0.0	0.0	601

Hour	Typical		Sunday				Monday			
	OADB	OAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
1	66.6	62.3	0.0	125.0	140.2	720	0.0	125.0	140.2	728
2	64.5	60.4	0.0	37.8	55.4	751	0.0	30.7	50.3	751
3	62.7	59.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
4	61.2	58.1	0.0	14.9	24.5	751	0.0	14.9	24.5	751
5	60.0	57.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
6	59.3	56.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
7	59.0	56.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
8	59.5	56.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
9	60.9	56.6	0.0	0.0	0.0	751	0.0	0.0	0.0	751
10	63.0	57.2	0.0	0.0	0.0	751	0.0	0.0	0.0	751
11	65.7	58.1	0.0	0.0	0.0	751	0.0	0.0	0.0	751
12	68.7	59.8	0.0	0.0	0.0	751	0.0	0.0	0.0	751
13	71.7	61.6	19.8	0.0	0.0	724	50.6	0.0	0.0	693
14	74.5	63.4	24.1	0.0	0.0	692	71.1	0.0	0.0	615
15	76.6	64.8	32.1	0.0	0.0	653	79.8	0.0	0.0	529
16	78.0	65.6	38.1	0.0	0.0	609	80.0	0.0	0.0	444
17	78.5	65.6	0.0	0.0	0.0	609	0.0	0.0	0.0	444
18	78.2	65.8	0.0	0.0	0.0	609	0.0	0.0	0.0	444
19	77.5	65.6	0.0	0.0	0.0	609	0.0	0.0	0.0	444
20	76.3	66.1	0.0	0.0	0.0	609	0.0	0.0	0.0	444
21	74.8	67.2	0.0	0.0	0.0	609	0.0	0.0	0.0	444
22	73.0	66.4	0.0	0.0	0.0	609	0.0	0.0	0.0	444
23	70.9	65.4	0.0	0.0	0.0	609	0.0	0.0	0.0	444
24	68.7	64.0	0.0	0.0	0.0	609	0.0	0.0	0.0	444

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

June

Hour	Design		Design			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	79.5	66.2	0.0	125.0	145.5	564
2	78.5	65.3	0.0	125.0	144.3	683
3	77.7	65.1	0.0	74.3	86.3	751
4	77.2	64.8	0.0	0.0	0.0	743
5	77.0	65.1	0.0	14.9	24.9	751
6	77.4	65.6	0.0	0.0	0.0	743
7	78.3	66.5	0.0	14.9	25.1	751
8	80.0	67.7	0.0	0.0	0.0	743
9	82.5	68.3	0.0	0.0	0.0	743
10	85.4	69.5	0.0	0.0	0.0	743
11	88.7	70.8	0.0	0.0	0.0	743
12	91.8	72.2	0.0	0.0	0.0	743
13	94.1	72.6	107.2	0.0	0.0	629
14	95.6	72.9	135.8	0.0	0.0	487
15	96.2	72.9	139.5	0.0	0.0	342
16	95.6	72.0	138.6	0.0	0.0	200
17	94.3	70.8	0.0	0.0	0.0	200
18	92.1	69.7	0.0	0.0	0.0	200
19	89.6	68.3	0.0	0.0	0.0	200
20	87.1	67.7	0.0	0.0	0.0	200
21	85.0	67.5	0.0	0.0	0.0	200
22	83.1	67.3	0.0	0.0	0.0	200
23	81.6	66.8	0.0	0.0	0.0	200
24	80.4	66.3	0.0	0.0	0.0	200

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	73.0	67.9	0.0	125.0	140.2	323	0.0	125.0	140.2	421
2	71.2	66.1	0.0	125.0	140.2	445	0.0	125.0	140.2	542
3	69.7	65.2	0.0	125.0	140.2	566	0.0	125.0	140.2	661
4	68.5	64.3	0.0	125.0	140.2	685	0.0	96.5	106.6	751
5	67.8	64.2	0.0	72.7	83.0	751	0.0	0.0	0.0	743
6	67.6	64.2	0.0	0.0	0.0	743	0.0	14.9	24.5	751
7	68.1	64.8	0.0	14.9	24.5	751	0.0	0.0	0.0	743
8	69.4	65.7	0.0	0.0	0.0	743	0.0	14.9	24.5	751
9	71.6	66.2	0.0	0.0	0.0	743	0.0	0.0	0.0	751
10	74.2	67.2	0.0	0.0	0.0	743	0.0	0.0	0.0	751
11	77.2	68.5	0.0	0.0	0.0	743	0.0	0.0	0.0	751
12	80.2	70.0	0.0	0.0	0.0	743	0.0	0.0	0.0	751
13	82.8	70.8	81.8	0.0	0.0	654	51.9	0.0	0.0	692
14	85.0	71.6	110.5	0.0	0.0	537	61.0	0.0	0.0	624
15	86.3	72.3	114.9	0.0	0.0	417	66.8	0.0	0.0	551

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
	OADB (F)	QAWB (F)								
16	86.8	72.1	114.0	0.0	0.0	299	64.4	0.0	0.0	481
17	86.6	71.7	0.0	0.0	0.0	299	0.0	0.0	0.0	481
18	85.8	71.5	0.0	0.0	0.0	299	0.0	0.0	0.0	481
19	84.7	71.2	0.0	0.0	0.0	299	0.0	0.0	0.0	481
20	83.2	71.5	0.0	0.0	0.0	299	0.0	0.0	0.0	481
21	81.4	71.7	0.0	0.0	0.0	299	0.0	0.0	0.0	481
22	79.3	71.4	0.0	0.0	0.0	299	0.0	0.0	0.0	481
23	77.2	70.5	0.0	0.0	0.0	299	0.0	0.0	0.0	481
24	75.1	69.1	0.0	0.0	0.0	299	0.0	0.0	0.0	481

Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
	OADB (F)	QAWB (F)								
1	73.0	67.9	0.0	125.0	140.2	601	0.0	125.0	140.2	594
2	71.2	66.1	0.0	125.0	140.2	720	0.0	125.0	140.2	713
3	69.7	65.2	0.0	38.3	55.7	751	0.0	45.3	60.6	751
4	68.5	64.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	67.8	64.2	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	67.6	64.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	68.1	64.8	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	69.4	65.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	71.6	66.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	74.2	67.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	77.2	68.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	80.2	70.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	82.8	70.8	51.9	0.0	0.0	684	81.8	0.0	0.0	654
14	85.0	71.6	61.0	0.0	0.0	616	110.5	0.0	0.0	537
15	86.3	72.3	66.8	0.0	0.0	543	114.9	0.0	0.0	417
16	86.8	72.1	64.4	0.0	0.0	473	114.0	0.0	0.0	299
17	86.6	71.7	0.0	0.0	0.0	473	0.0	0.0	0.0	299
18	85.8	71.5	0.0	0.0	0.0	473	0.0	0.0	0.0	299
19	84.7	71.2	0.0	0.0	0.0	473	0.0	0.0	0.0	299
20	83.2	71.5	0.0	0.0	0.0	473	0.0	0.0	0.0	299
21	81.4	71.7	0.0	0.0	0.0	473	0.0	0.0	0.0	299
22	79.3	71.4	0.0	0.0	0.0	473	0.0	0.0	0.0	299
23	77.2	70.5	0.0	0.0	0.0	473	0.0	0.0	0.0	299
24	75.1	69.1	0.0	0.0	0.0	473	0.0	0.0	0.0	299

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

July

Hour	Design		Design			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	78.9	67.7	0.0	125.0	144.8	421
2	78.2	67.2	0.0	125.0	143.9	542
3	77.6	66.8	0.0	125.0	143.3	661
4	77.1	66.6	0.0	96.5	108.5	751
5	77.0	66.6	0.0	0.0	0.0	743
6	77.3	66.9	0.0	14.9	24.9	751
7	78.0	67.6	0.0	0.0	0.0	743
8	79.4	68.8	0.0	14.9	25.4	751
9	81.3	69.6	0.0	0.0	0.0	751
10	83.6	70.7	0.0	0.0	0.0	751
11	86.1	72.2	0.0	0.0	0.0	751
12	88.5	73.3	0.0	0.0	0.0	751
13	90.3	74.0	108.1	0.0	0.0	635
14	91.5	74.3	135.0	0.0	0.0	494
15	92.0	74.0	139.0	0.0	0.0	350
16	91.5	73.2	138.3	0.0	0.0	208
17	90.5	72.1	0.0	0.0	0.0	208
18	88.8	70.8	0.0	0.0	0.0	208
19	86.9	70.4	0.0	0.0	0.0	208
20	84.9	70.2	0.0	0.0	0.0	208
21	83.3	70.0	0.0	0.0	0.0	208
22	81.8	69.4	0.0	0.0	0.0	208
23	80.6	68.7	0.0	0.0	0.0	208
24	79.7	68.4	0.0	0.0	0.0	208

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	72.0	69.3	0.0	125.0	140.2	331	0.0	125.0	140.2	432
2	70.5	68.0	0.0	125.0	140.2	453	0.0	125.0	140.2	553
3	69.4	67.1	0.0	125.0	140.2	573	0.0	125.0	140.2	673
4	68.5	66.4	0.0	125.0	140.2	693	0.0	85.1	94.8	751
5	67.9	66.0	0.0	65.3	76.4	751	0.0	0.0	0.0	743
6	67.7	65.9	0.0	0.0	0.0	743	0.0	14.9	24.5	751
7	68.1	66.3	0.0	14.9	24.5	751	0.0	0.0	0.0	743
8	69.1	67.3	0.0	0.0	0.0	743	0.0	14.9	24.5	751
9	70.8	68.0	0.0	0.0	0.0	743	0.0	0.0	0.0	751
10	72.9	69.1	0.0	0.0	0.0	743	0.0	0.0	0.0	751
11	75.2	70.5	0.0	0.0	0.0	743	0.0	0.0	0.0	751
12	77.5	71.7	0.0	0.0	0.0	743	0.0	0.0	0.0	751
13	79.6	72.7	77.9	0.0	0.0	658	49.4	0.0	0.0	694
14	81.3	73.5	108.2	0.0	0.0	543	57.4	0.0	0.0	630
15	82.3	73.7	112.0	0.0	0.0	426	63.8	0.0	0.0	560

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB	QAWB	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
	(F)	(F)	(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
16	82.7	73.5	111.0	0.0	0.0	311	61.2	0.0	0.0	493
17	82.5	73.1	0.0	0.0	0.0	311	0.0	0.0	0.0	493
18	82.0	72.6	0.0	0.0	0.0	311	0.0	0.0	0.0	493
19	81.1	73.2	0.0	0.0	0.0	311	0.0	0.0	0.0	493
20	79.9	73.8	0.0	0.0	0.0	311	0.0	0.0	0.0	493
21	78.5	73.9	0.0	0.0	0.0	311	0.0	0.0	0.0	493
22	76.9	73.1	0.0	0.0	0.0	311	0.0	0.0	0.0	493
23	75.2	71.9	0.0	0.0	0.0	311	0.0	0.0	0.0	493
24	73.5	70.8	0.0	0.0	0.0	311	0.0	0.0	0.0	493

Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB	QAWB	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
	(F)	(F)	(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
1	72.0	69.3	0.0	125.0	140.2	613	0.0	125.0	140.2	606
2	70.5	68.0	0.0	125.0	140.2	732	0.0	125.0	140.2	725
3	69.4	67.1	0.0	26.6	43.5	751	0.0	33.6	52.6	751
4	68.5	66.4	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	67.9	66.0	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	67.7	65.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	68.1	66.3	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	69.1	67.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	70.8	68.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	72.9	69.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	75.2	70.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	77.5	71.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	79.6	72.7	49.4	0.0	0.0	687	77.9	0.0	0.0	658
14	81.3	73.5	57.4	0.0	0.0	622	108.2	0.0	0.0	543
15	82.3	73.7	63.8	0.0	0.0	552	112.0	0.0	0.0	426
16	82.7	73.5	61.2	0.0	0.0	486	111.0	0.0	0.0	311
17	82.5	73.1	0.0	0.0	0.0	486	0.0	0.0	0.0	311
18	82.0	72.6	0.0	0.0	0.0	486	0.0	0.0	0.0	311
19	81.1	73.2	0.0	0.0	0.0	486	0.0	0.0	0.0	311
20	79.9	73.8	0.0	0.0	0.0	486	0.0	0.0	0.0	311
21	78.5	73.9	0.0	0.0	0.0	486	0.0	0.0	0.0	311
22	76.9	73.1	0.0	0.0	0.0	486	0.0	0.0	0.0	311
23	75.2	71.9	0.0	0.0	0.0	486	0.0	0.0	0.0	311
24	73.5	70.8	0.0	0.0	0.0	486	0.0	0.0	0.0	311

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

August

Hour	Design		Design			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	78.6	67.6	0.0	125.0	144.4	432
2	77.9	67.2	0.0	125.0	143.6	553
3	77.2	66.9	0.0	125.0	142.8	673
4	76.8	66.6	0.0	85.1	96.2	751
5	76.6	66.7	0.0	0.0	0.0	743
6	76.9	67.1	0.0	14.9	24.8	751
7	77.7	67.8	0.0	0.0	0.0	743
8	79.1	69.0	0.0	14.9	25.3	751
9	81.2	70.0	0.0	0.0	0.0	751
10	83.5	70.9	0.0	0.0	0.0	751
11	86.2	71.8	0.0	0.0	0.0	751
12	88.7	72.7	0.0	0.0	0.0	751
13	90.6	73.2	105.8	0.0	0.0	638
14	91.8	73.8	136.3	0.0	0.0	495
15	92.3	74.0	141.1	0.0	0.0	349
16	91.8	73.3	139.5	0.0	0.0	206
17	90.7	72.4	0.0	0.0	0.0	206
18	89.0	71.4	0.0	0.0	0.0	206
19	87.0	70.1	0.0	0.0	0.0	206
20	84.9	69.8	0.0	0.0	0.0	206
21	83.2	70.3	0.0	0.0	0.0	206
22	81.6	69.3	0.0	0.0	0.0	206
23	80.4	68.5	0.0	0.0	0.0	206
24	79.4	67.9	0.0	0.0	0.0	206

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	72.7	70.2	0.0	125.0	140.2	329	0.0	125.0	140.2	427
2	71.2	69.0	0.0	125.0	140.2	451	0.0	125.0	140.2	548
3	69.9	68.0	0.0	125.0	140.2	571	0.0	125.0	140.2	667
4	68.8	67.1	0.0	125.0	140.2	690	0.0	90.5	100.3	751
5	68.0	66.6	0.0	67.5	78.3	751	0.0	0.0	0.0	743
6	67.5	66.2	0.0	0.0	0.0	743	0.0	14.9	24.5	751
7	67.3	66.1	0.0	14.9	24.5	751	0.0	0.0	0.0	743
8	67.8	66.5	0.0	0.0	0.0	743	0.0	14.9	24.5	751
9	69.1	67.0	0.0	0.0	0.0	743	0.0	0.0	0.0	751
10	71.2	67.8	0.0	0.0	0.0	743	0.0	0.0	0.0	751
11	73.8	68.7	0.0	0.0	0.0	743	0.0	0.0	0.0	751
12	76.5	70.0	0.0	0.0	0.0	743	0.0	0.0	0.0	751
13	79.1	71.2	80.4	0.0	0.0	656	51.1	0.0	0.0	692
14	81.1	72.6	110.7	0.0	0.0	538	59.3	0.0	0.0	626
15	82.5	73.6	115.9	0.0	0.0	417	67.0	0.0	0.0	553

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
	OADB (F)	CAWB (F)								
16	83.0	73.7	108.0	0.0	0.0	305	57.5	0.0	0.0	490
17	82.8	73.5	0.0	0.0	0.0	305	0.0	0.0	0.0	490
18	82.3	73.5	0.0	0.0	0.0	305	0.0	0.0	0.0	490
19	81.5	73.1	0.0	0.0	0.0	305	0.0	0.0	0.0	490
20	80.4	73.7	0.0	0.0	0.0	305	0.0	0.0	0.0	490
21	79.1	74.9	0.0	0.0	0.0	305	0.0	0.0	0.0	490
22	77.6	73.9	0.0	0.0	0.0	305	0.0	0.0	0.0	490
23	76.0	72.7	0.0	0.0	0.0	305	0.0	0.0	0.0	490
24	74.3	71.3	0.0	0.0	0.0	305	0.0	0.0	0.0	490
Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
	OADB (F)	CAWB (F)								
1	72.7	70.2	0.0	125.0	140.2	610	0.0	125.0	140.2	603
2	71.2	69.0	0.0	125.0	140.2	729	0.0	125.0	140.2	722
3	69.9	68.0	0.0	29.5	48.2	751	0.0	36.5	54.5	751
4	68.8	67.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	68.0	66.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	67.5	66.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	67.3	66.1	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	67.8	66.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	69.1	67.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	71.2	67.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	73.8	68.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	76.5	70.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	79.1	71.2	51.1	0.0	0.0	685	80.4	0.0	0.0	656
14	81.1	72.6	59.3	0.0	0.0	619	110.7	0.0	0.0	538
15	82.5	73.6	67.0	0.0	0.0	546	115.9	0.0	0.0	417
16	83.0	73.7	57.5	0.0	0.0	483	108.0	0.0	0.0	305
17	82.8	73.5	0.0	0.0	0.0	483	0.0	0.0	0.0	305
18	82.3	73.5	0.0	0.0	0.0	483	0.0	0.0	0.0	305
19	81.5	73.1	0.0	0.0	0.0	483	0.0	0.0	0.0	305
20	80.4	73.7	0.0	0.0	0.0	483	0.0	0.0	0.0	305
21	79.1	74.9	0.0	0.0	0.0	483	0.0	0.0	0.0	305
22	77.6	73.9	0.0	0.0	0.0	483	0.0	0.0	0.0	305
23	76.0	72.7	0.0	0.0	0.0	483	0.0	0.0	0.0	305
24	74.3	71.3	0.0	0.0	0.0	483	0.0	0.0	0.0	305

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

September

Hour	Design		Design			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)
1	74.6	63.1	0.0	125.0	140.2	427
2	73.7	62.4	0.0	125.0	140.2	548
3	73.0	61.9	0.0	125.0	140.2	667
4	72.4	61.7	0.0	90.5	100.3	751
5	72.3	61.8	0.0	0.0	0.0	743
6	72.6	62.5	0.0	14.9	24.5	751
7	73.5	63.2	0.0	0.0	0.0	743
8	75.1	64.8	0.0	14.9	24.5	751
9	77.4	65.9	0.0	0.0	0.0	751
10	80.0	66.8	0.0	0.0	0.0	751
11	83.0	67.8	0.0	0.0	0.0	751
12	85.8	68.5	0.0	0.0	0.0	751
13	87.9	69.7	96.9	0.0	0.0	647
14	89.3	70.2	121.5	0.0	0.0	519
15	89.9	70.1	124.9	0.0	0.0	389
16	89.3	69.1	122.7	0.0	0.0	262
17	88.1	67.8	0.0	0.0	0.0	262
18	86.2	66.8	0.0	0.0	0.0	262
19	83.9	66.5	0.0	0.0	0.0	262
20	81.6	66.3	0.0	0.0	0.0	262
21	79.7	66.1	0.0	0.0	0.0	262
22	77.9	65.0	0.0	0.0	0.0	262
23	76.5	64.4	0.0	0.0	0.0	262
24	75.4	63.6	0.0	0.0	0.0	262

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
1	69.8	66.1	0.0	125.0	140.2	384	0.0	125.0	140.2	500
2	68.0	64.5	0.0	125.0	140.2	505	0.0	125.0	140.2	620
3	66.3	63.0	0.0	125.0	140.2	625	0.0	125.0	140.2	739
4	64.9	61.9	0.0	125.0	140.2	744	0.0	19.4	31.8	751
5	63.9	61.3	0.0	14.3	23.4	751	0.0	0.0	0.0	743
6	63.2	61.0	0.0	0.0	0.0	743	0.0	14.9	24.5	751
7	63.0	60.8	0.0	14.9	24.5	751	0.0	0.0	0.0	743
8	63.4	61.4	0.0	0.0	0.0	743	0.0	14.9	24.5	751
9	64.7	61.8	0.0	0.0	0.0	743	0.0	0.0	0.0	751
10	66.6	62.1	0.0	0.0	0.0	743	0.0	0.0	0.0	751
11	69.1	62.9	0.0	0.0	0.0	743	0.0	0.0	0.0	751
12	71.8	63.7	0.0	0.0	0.0	743	0.0	0.0	0.0	751
13	74.5	65.5	64.1	0.0	0.0	672	30.2	0.0	0.0	713
14	77.0	67.1	89.3	0.0	0.0	576	42.8	0.0	0.0	663
15	78.9	68.2	91.7	0.0	0.0	478	44.2	0.0	0.0	612

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB (F)	QAWB (F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
16	80.2	68.6	94.7	0.0	0.0	379	44.8	0.0	0.0	562
17	80.6	68.5	0.0	0.0	0.0	379	0.0	0.0	0.0	562
18	80.4	68.9	0.0	0.0	0.0	379	0.0	0.0	0.0	562
19	79.7	70.0	0.0	0.0	0.0	379	0.0	0.0	0.0	562
20	78.7	71.2	0.0	0.0	0.0	379	0.0	0.0	0.0	562
21	77.3	71.6	0.0	0.0	0.0	379	0.0	0.0	0.0	562
22	75.6	70.5	0.0	0.0	0.0	379	0.0	0.0	0.0	562
23	73.7	69.4	0.0	0.0	0.0	379	0.0	0.0	0.0	562
24	71.8	67.7	0.0	0.0	0.0	379	0.0	0.0	0.0	562

Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB (F)	QAWB (F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	69.8	66.1	0.0	125.0	140.2	681	0.0	125.0	140.2	681
2	68.0	64.5	0.0	76.9	86.8	751	0.0	76.9	86.8	751
3	66.3	63.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
4	64.9	61.9	0.0	14.9	24.5	751	0.0	14.9	24.5	751
5	63.9	61.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
6	63.2	61.0	0.0	14.9	24.5	751	0.0	14.9	24.5	751
7	63.0	60.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
8	63.4	61.4	0.0	14.9	24.5	751	0.0	14.9	24.5	751
9	64.7	61.8	0.0	0.0	0.0	751	0.0	0.0	0.0	751
10	66.6	62.1	0.0	0.0	0.0	751	0.0	0.0	0.0	751
11	69.1	62.9	0.0	0.0	0.0	751	0.0	0.0	0.0	751
12	71.8	63.7	0.0	0.0	0.0	751	0.0	0.0	0.0	751
13	74.5	65.5	30.2	0.0	0.0	713	64.1	0.0	0.0	679
14	77.0	67.1	42.8	0.0	0.0	663	89.4	0.0	0.0	583
15	78.9	68.2	44.2	0.0	0.0	612	91.7	0.0	0.0	486
16	80.2	68.6	44.8	0.0	0.0	562	94.7	0.0	0.0	386
17	80.6	68.5	0.0	0.0	0.0	562	0.0	0.0	0.0	386
18	80.4	68.9	0.0	0.0	0.0	562	0.0	0.0	0.0	386
19	79.7	70.0	0.0	0.0	0.0	562	0.0	0.0	0.0	386
20	78.7	71.2	0.0	0.0	0.0	562	0.0	0.0	0.0	386
21	77.3	71.6	0.0	0.0	0.0	562	0.0	0.0	0.0	386
22	75.6	70.5	0.0	0.0	0.0	562	0.0	0.0	0.0	386
23	73.7	69.4	0.0	0.0	0.0	562	0.0	0.0	0.0	386
24	71.8	67.7	0.0	0.0	0.0	562	0.0	0.0	0.0	386

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

October

Hour	Design		Design			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	59.5	50.0	0.0	125.0	140.2	507
2	58.5	49.3	1.7	125.0	140.2	625
3	57.7	48.8	0.9	125.0	140.2	743
4	57.1	48.5	0.0	15.1	24.6	751
5	56.9	48.3	0.0	0.0	0.0	743
6	57.3	48.7	0.0	14.9	24.5	751
7	58.3	49.7	0.0	0.0	0.0	743
8	60.1	51.3	0.0	14.9	24.5	751
9	62.7	52.9	0.0	0.0	0.0	751
10	65.7	54.4	0.0	0.0	0.0	751
11	69.1	55.5	0.0	0.0	0.0	751
12	72.3	56.7	0.0	0.0	0.0	751
13	74.7	57.8	67.3	0.0	0.0	676
14	76.3	58.6	83.3	0.0	0.0	586
15	76.9	58.7	86.8	0.0	0.0	493
16	76.3	58.0	84.2	0.0	0.0	404
17	74.9	57.0	0.0	0.0	0.0	404
18	72.7	56.0	0.0	0.0	0.0	404
19	70.1	55.5	0.0	0.0	0.0	404
20	67.5	54.7	0.0	0.0	0.0	404
21	65.3	53.6	0.0	0.0	0.0	404
22	63.3	52.4	0.0	0.0	0.0	404
23	61.7	51.5	0.0	0.0	0.0	404
24	60.5	50.7	0.0	0.0	0.0	404

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	54.8	51.3	0.0	125.0	140.2	525	0.0	125.0	140.2	616
2	52.9	49.6	0.0	125.0	140.2	645	0.0	125.0	140.2	734
3	51.2	48.2	0.0	112.4	124.6	751	0.0	23.9	39.2	751
4	49.8	47.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	48.8	46.2	2.0	16.9	27.7	751	1.9	16.9	27.6	751
6	48.2	45.7	1.5	0.0	0.0	742	1.5	0.0	0.0	742
7	47.9	45.6	0.0	16.5	27.0	751	0.0	16.4	26.8	751
8	48.5	46.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	50.3	47.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	52.9	48.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	56.2	49.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	59.6	51.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	62.9	53.5	40.3	0.0	0.0	696	16.8	0.0	0.0	719
14	65.5	55.2	57.8	0.0	0.0	631	17.4	0.0	0.0	695
15	67.3	56.3	61.7	0.0	0.0	563	18.5	0.0	0.0	669

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	----- Weekday -----						----- Saturday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB	QAWB	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
	(F)	(F)	(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
16	67.9	56.6	61.9	0.0	0.0	496	18.7	0.0	0.0	644
17	67.7	56.4	0.0	0.0	0.0	496	0.0	0.0	0.0	644
18	67.0	56.6	0.0	0.0	0.0	496	0.0	0.0	0.0	644
19	66.0	57.6	0.0	0.0	0.0	496	0.0	0.0	0.0	644
20	64.6	57.9	0.0	0.0	0.0	496	0.0	0.0	0.0	644
21	62.9	57.3	0.0	0.0	0.0	496	0.0	0.0	0.0	644
22	61.0	56.0	0.0	0.0	0.0	496	0.0	0.0	0.0	644
23	59.0	54.8	0.0	0.0	0.0	496	0.0	0.0	0.0	644
24	56.9	53.0	0.0	0.0	0.0	496	0.0	0.0	0.0	644

Hour	----- Sunday -----						----- Monday -----			
	Typical		Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	OADB	QAWB	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
	(F)	(F)	(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
1	54.8	51.3	0.0	113.6	126.1	751	0.0	113.6	126.1	751
2	52.9	49.6	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	51.2	48.2	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	49.8	47.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	48.8	46.2	1.9	16.9	27.6	751	1.9	16.9	27.6	751
6	48.2	45.7	1.5	0.0	0.0	742	1.5	0.0	0.0	742
7	47.9	45.6	0.0	16.4	26.8	751	0.0	16.4	26.8	751
8	48.5	46.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	50.3	47.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	52.9	48.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	56.2	49.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	59.6	51.5	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	62.9	53.5	16.7	0.0	0.0	719	24.9	0.0	0.0	711
14	65.5	55.2	17.4	0.0	0.0	695	50.7	0.0	0.0	653
15	67.3	56.3	18.5	0.0	0.0	669	58.2	0.0	0.0	589
16	67.9	56.6	18.7	0.0	0.0	644	61.9	0.0	0.0	521
17	67.7	56.4	0.0	0.0	0.0	644	0.0	0.0	0.0	521
18	67.0	56.6	0.0	0.0	0.0	644	0.0	0.0	0.0	521
19	66.0	57.6	0.0	0.0	0.0	644	0.0	0.0	0.0	521
20	64.6	57.9	0.0	0.0	0.0	644	0.0	0.0	0.0	521
21	62.9	57.3	0.0	0.0	0.0	644	0.0	0.0	0.0	521
22	61.0	56.0	0.0	0.0	0.0	644	0.0	0.0	0.0	521
23	59.0	54.8	0.0	0.0	0.0	644	0.0	0.0	0.0	521
24	56.9	53.0	0.0	0.0	0.0	644	0.0	0.0	0.0	521

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

November

Hour	Design		Design			Storage Capacity (Ton-Hr)
	OADB (F)	OAWB (F)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	
1	56.0	47.2	0.0	125.0	140.2	641
2	55.0	46.4	0.0	116.9	130.1	751
3	54.2	45.8	0.0	0.0	0.0	743
4	53.6	45.2	0.0	14.9	24.5	751
5	53.4	45.3	0.0	0.0	0.0	743
6	53.8	45.9	0.0	14.9	24.5	751
7	54.8	46.9	0.0	0.0	0.0	743
8	56.6	48.7	0.0	14.9	24.5	751
9	59.2	50.6	0.0	0.0	0.0	751
10	62.2	52.6	0.0	0.0	0.0	751
11	65.6	54.1	0.0	0.0	0.0	751
12	68.8	55.3	0.0	0.0	0.0	751
13	71.2	55.7	0.0	0.0	0.0	743
14	72.8	56.3	0.0	0.0	0.0	736
15	73.4	56.2	0.0	0.0	0.0	729
16	72.8	55.6	0.0	0.0	0.0	721
17	71.4	54.6	0.0	0.0	0.0	721
18	69.2	53.6	0.0	0.0	0.0	721
19	66.6	53.0	0.0	0.0	0.0	721
20	64.0	51.7	0.0	0.0	0.0	721
21	61.8	50.7	0.0	0.0	0.0	721
22	59.8	49.6	0.0	0.0	0.0	721
23	58.2	48.7	0.0	0.0	0.0	721
24	57.0	48.0	0.0	0.0	0.0	721

Hour	Typical		Weekday				Saturday			
	OADB (F)	OAWB (F)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)	Cooling Load (Ton)	Chiller Load (Ton)	Chiller Demand (kW)	Storage Capacity (Ton-Hr)
1	48.7	45.7	0.0	36.8	54.7	751	0.0	43.9	59.6	751
2	46.9	44.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	45.5	42.8	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	44.6	41.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	44.4	42.0	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	44.8	42.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	45.9	43.9	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	47.8	46.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	50.2	48.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	52.9	49.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	55.8	51.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	58.5	52.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	60.9	52.5	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	62.8	53.4	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	64.0	53.8	0.0	0.0	0.0	721	0.0	0.0	0.0	721

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
16	64.4	53.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	64.1	53.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	63.2	53.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	61.8	54.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	60.0	53.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	57.9	52.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	55.6	51.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	53.2	49.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	50.8	47.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714

Hour	Typical		Sunday				Monday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	48.7	45.7	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	46.9	44.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	45.5	42.8	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	44.6	41.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	44.4	42.0	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	44.8	42.7	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	45.9	43.9	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	47.8	46.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	50.2	48.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	52.9	49.9	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	55.8	51.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	58.5	52.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	60.9	52.5	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	62.8	53.4	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	64.0	53.8	0.0	0.0	0.0	721	0.0	0.0	0.0	721
16	64.4	53.9	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	64.1	53.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	63.2	53.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	61.8	54.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	60.0	53.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	57.9	52.7	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	55.6	51.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	53.2	49.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	50.8	47.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

---- BUILDING COOLING DEMANDS AND THERMAL STORAGE ----

December

Hour	Design		Design			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	48.2	40.8	0.0	43.9	59.6	751
2	47.3	40.2	0.0	0.0	0.0	743
3	46.6	39.7	0.0	14.9	24.5	751
4	46.1	39.3	0.0	0.0	0.0	743
5	45.9	39.4	0.0	14.9	24.5	751
6	46.3	39.7	0.0	0.0	0.0	743
7	47.1	40.6	0.0	14.9	24.5	751
8	48.7	42.0	0.0	0.0	0.0	743
9	50.9	44.0	0.0	0.0	0.0	743
10	53.5	46.1	0.0	0.0	0.0	743
11	56.5	48.0	0.0	0.0	0.0	743
12	59.2	49.7	0.0	0.0	0.0	743
13	61.3	50.8	0.0	0.0	0.0	736
14	62.7	51.4	0.0	0.0	0.0	729
15	63.2	51.4	0.0	0.0	0.0	721
16	62.7	50.7	0.0	0.0	0.0	714
17	61.5	49.7	0.0	0.0	0.0	714
18	59.6	48.5	0.0	0.0	0.0	714
19	57.3	47.6	0.0	0.0	0.0	714
20	55.1	45.9	0.0	0.0	0.0	714
21	53.2	44.6	0.0	0.0	0.0	714
22	51.5	43.1	0.0	0.0	0.0	714
23	50.1	42.2	0.0	0.0	0.0	714
24	49.0	41.5	0.0	0.0	0.0	714

Hour	Typical		Weekday				Saturday			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)	Load (Ton)	Load (Ton)	Demand (kW)	Capacity (Ton-Hr)
1	37.5	35.3	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	37.1	35.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	37.4	35.5	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	38.1	36.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	39.3	37.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	40.9	39.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	42.7	41.2	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	44.7	43.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	46.8	45.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	48.8	47.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	50.7	48.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	52.2	48.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	53.4	49.2	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	54.1	49.2	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	54.4	48.9	0.0	0.0	0.0	721	0.0	0.0	0.0	721

COLD THERMAL STORAGE - ALTERNATIVE 1
BLDG G101, ECO #13

Hour	Typical		----- Weekday -----				----- Saturday -----			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
16	54.0	48.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	53.0	47.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	51.4	46.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	49.3	45.4	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	47.0	43.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	44.5	41.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	42.2	39.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	40.1	37.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	38.5	36.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714

Hour	Typical		----- Sunday -----				----- Monday -----			
	OADB	QAWB	Cooling	Chiller	Chiller	Storage	Cooling	Chiller	Chiller	Storage
	(F)	(F)	Load	Load	Demand	Capacity	Load	Load	Demand	Capacity
			(Ton)	(Ton)	(kW)	(Ton-Hr)	(Ton)	(Ton)	(kW)	(Ton-Hr)
1	37.5	35.3	0.0	43.9	59.6	751	0.0	43.9	59.6	751
2	37.1	35.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
3	37.4	35.5	0.0	14.9	24.5	751	0.0	14.9	24.5	751
4	38.1	36.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
5	39.3	37.6	0.0	14.9	24.5	751	0.0	14.9	24.5	751
6	40.9	39.2	0.0	0.0	0.0	743	0.0	0.0	0.0	743
7	42.7	41.2	0.0	14.9	24.5	751	0.0	14.9	24.5	751
8	44.7	43.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
9	46.8	45.3	0.0	0.0	0.0	743	0.0	0.0	0.0	743
10	48.8	47.0	0.0	0.0	0.0	743	0.0	0.0	0.0	743
11	50.7	48.1	0.0	0.0	0.0	743	0.0	0.0	0.0	743
12	52.2	48.8	0.0	0.0	0.0	743	0.0	0.0	0.0	743
13	53.4	49.2	0.0	0.0	0.0	736	0.0	0.0	0.0	736
14	54.1	49.2	0.0	0.0	0.0	729	0.0	0.0	0.0	729
15	54.4	48.9	0.0	0.0	0.0	721	0.0	0.0	0.0	721
16	54.0	48.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714
17	53.0	47.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
18	51.4	46.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
19	49.3	45.4	0.0	0.0	0.0	714	0.0	0.0	0.0	714
20	47.0	43.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
21	44.5	41.5	0.0	0.0	0.0	714	0.0	0.0	0.0	714
22	42.2	39.3	0.0	0.0	0.0	714	0.0	0.0	0.0	714
23	40.1	37.6	0.0	0.0	0.0	714	0.0	0.0	0.0	714
24	38.5	36.2	0.0	0.0	0.0	714	0.0	0.0	0.0	714

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
BLDG G101, ECO #13

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 120,182
ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	9,266.2	633,624.6	5.1	8.5	761,859.0	6.5
Primary Cooling						
Compressor	330,325.6	0.0	0.0	14.5	3,382,541.8	28.8
Tower/Cond Fans	25,471.3	0.0	0.0	1.1	260,826.2	2.2
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	6,906.9	0.0	0.0	0.3	70,726.8	0.6
Auxiliary						
Supply Fans	416,647.3	0.0	0.0	18.2	4,266,477.5	36.4
Circulation Pumps	142,592.0	0.0	0.0	6.2	1,460,145.0	12.5
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	559,239.2	0.0	0.0	24.5	5,726,622.5	48.8
Lighting	729,764.0	0.0	0.0	31.9	7,472,800.5	62.2
Receptacle	439,233.8	0.0	0.0	19.2	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	2,100,206.8	633,624.6	5.1	100.0	22,173,140.0	186.6

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #15

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	WATER	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)		On Peak (Thrm/hr)
Jan	135,443	335	1,875	1	9
Feb	123,834	335	1,817	1	9
March	132,657	335	455	0	5
April	119,262	335	8	0	2
May	183,212	571	0	0	0
June	208,984	643	0	0	0
July	205,681	631	0	0	0
Aug	213,267	634	0	0	0
Sept	182,522	597	0	0	0
Oct	157,871	506	0	0	0
Nov	122,315	335	272	0	4
Dec	130,746	335	1,226	1	6
Total	1,915,794	643	5,653	3	9

Building Energy Consumption = 59,110 (Btu/Sq Ft/Year)
Source Energy Consumption = 168,186 (Btu/Sq Ft/Year)

Floor Area = 120,182 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
BLDG G101, ECO #15

----- E Q U I P M E N T E N E R G Y C O N S U M P T I O N -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	51699	46725	53507	49740	52603	51547	50796	53507	49740	52603	49740	50796	613,004
	PK	139.6	139.6	139.6	139.6	139.6	139.6	139.6	139.6	139.6	139.6	139.6	139.6	139.6
1	MISC LD													
	ELEC	36778	33261	39395	35169	38086	37787	35469	39395	35169	38086	35169	35469	439,234
	PK	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6	147.6
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ1121S		AIR-CLD RECIP 20-35 TONS											
	ELEC	0	0	0	0	5070	8988	8807	8930	6044	1807	0	0	39,645
	PK	0.0	0.0	0.0	0.0	32.5	39.7	38.2	38.3	32.1	18.7	0.0	0.0	39.7
1	EQ5200		CONDENSER FANS											
	ELEC	0	0	0	0	611	1138	1123	1130	745	173	0	0	4,920
	PK	0.0	0.0	0.0	0.0	3.6	4.4	4.3	4.3	3.8	2.7	0.0	0.0	4.4
1	EQ5001		CHILLED WATER PUMP C.V.											
	ELEC	0	0	0	0	4008	5256	5431	5431	4599	1409	0	0	26,134
	PK	0.0	0.0	0.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	0.0	0.0	7.3
1	EQ5313		CONTROLS											
	ELEC	0	0	0	0	165	216	223	223	189	58	0	0	1,074
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
2	EQ1120S		AIR-CLD RECIP <20 TONS											
	ELEC	0	0	0	0	3021	4885	4837	4981	3476	1545	0	0	22,744
	PK	0.0	0.0	0.0	0.0	17.8	21.3	20.9	21.1	17.9	11.2	0.0	0.0	21.3

2	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	363	617	614	627	428	145	0	0	2,793
	PK	0.0	0.0	0.0	0.0	2.0	2.4	2.4	2.4	2.1	1.6	0.0	0.0	2.4
2	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	1569	1656	1711	1711	1656	646	0	0	8,949
	PK	0.0	0.0	0.0	0.0	2.3	2.3	2.3	2.3	2.3	2.3	0.0	0.0	2.3
2	EQ5313	CONTROLS												
	ELEC	0	0	0	0	205	216	223	223	216	84	0	0	1,167
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS												
	ELEC	0	0	0	0	5732	10401	10302	10297	6763	1612	0	0	45,108
	PK	0.0	0.0	0.0	0.0	33.9	41.4	40.1	40.1	35.5	23.2	0.0	0.0	41.4
3	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	694	1300	1306	1290	837	157	0	0	5,585
	PK	0.0	0.0	0.0	0.0	4.1	4.9	4.8	4.8	4.3	3.1	0.0	0.0	4.9
3	EQ5313	CONTROLS												
	ELEC	0	0	0	0	163	216	223	223	180	60	0	0	1,066
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
4	EQ1122L	AIR-CLD RECIP >55 TONS												
	ELEC	0	0	0	0	17622	31290	29638	30267	20408	10002	0	0	139,227
	PK	0.0	0.0	0.0	0.0	110.9	145.1	136.9	139.7	120.1	70.1	0.0	0.0	145.1
4	EQ5200	CONDENSER FANS												
	ELEC	0	0	0	0	1992	3818	3671	3724	2418	828	0	0	16,400
	PK	0.0	0.0	0.0	0.0	13.4	17.3	16.4	16.7	14.6	9.7	0.0	0.0	17.3
4	EQ5001	CHILLED WATER PUMP C.V.												
	ELEC	0	0	0	0	15698	15192	15698	15698	15192	13082	0	0	90,561
	PK	0.0	0.0	0.0	0.0	21.1	21.1	21.1	21.1	21.1	21.1	0.0	0.0	21.1
4	EQ5313	CONTROLS												
	ELEC	0	0	0	0	223	216	223	223	216	186	0	0	1,288
	PK	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3
1	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	16899	15264	16899	16354	16899	16354	16899	16899	16354	16899	16354	16899	198,974
	PK	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
2	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	1797	1623	1797	1739	1797	1739	1797	1797	1739	1797	1739	1797	21,155
	PK	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	EQ4371	FAN COIL SUPPLY FAN												
	ELEC	2658	2401	2658	2572	2658	2572	2658	2658	2572	2658	2572	2658	31,294
	PK	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4	EQ4371	FAN COIL SUPPLY FAN												

[illegible]

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600
PAGE

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
BLDG G101, ECO #15

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 642.9 (kW)
Yearly Time of Peak 15 (hr) 6 (mo)

Hour 15 Month 6

Eqp. Ref. Num.	Equipment Code Name	Equipment Description	Utility Demand (kW)	Percent Of Tot (%)
----------------------	------------------------	-----------------------	---------------------------	--------------------------

Cooling Equipment

1	EQ1121S	AIR-CLD RECIP 20-35 TONS	51.6	8.02
2	EQ1120S	AIR-CLD RECIP <20 TONS	26.3	4.09
3	EQ1171L	AIR-CLD COND COMP 35-60 TONS	46.6	7.24
4	EQ1122L	AIR-CLD RECIP >55 TONS	183.8	28.59

Sub Total			308.3	47.95
-----------	--	--	-------	-------

Sub Total			0.0	0.00
-----------	--	--	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND	22.7	3.53
2	SUMMATION OF FAN ELECTRICAL DEMAND	2.4	0.38
3	SUMMATION OF FAN ELECTRICAL DEMAND	3.6	0.56
4	SUMMATION OF FAN ELECTRICAL DEMAND	9.3	1.44
5	SUMMATION OF FAN ELECTRICAL DEMAND	9.6	1.49

Sub Total		47.6	7.40
-----------	--	------	------

Sub Total		0.0	0.00
-----------	--	-----	------

Miscellaneous

Lights		139.6	21.71
Base Utilities		0.0	0.00
Misc Equipment		147.6	22.95
Sub Total		287.1	44.66

Grand Total		642.9	100.00
-------------	--	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
 BLDG G101, ECO #15

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
 Gross Conditioned Floor Area (sqft)..... 120,182
 ACM Multiplier 1.025

E N E R G Y U S E S U M M A R Y

	ELEC (kWh/yr)	GAS (kBtu/yr)	WATER (1000 gal)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	9,020.2	565,330.4	3.3	8.4	687,451.2	5.9
Primary Cooling						
Compressor	246,723.9	0.0	0.0	11.9	2,526,459.0	21.5
Tower/Cond Fans	29,749.0	0.0	0.0	1.4	304,630.8	2.6
Condenser Pump	0.0	0.0	0.0	0.0	0.0	0.0
Other Accessories	4,594.5	0.0	0.0	0.2	47,047.8	0.4
Auxiliary						
Supply Fans	416,647.3	0.0	0.0	20.0	4,266,477.5	36.4
Circulation Pumps	156,820.4	0.0	0.0	7.5	1,605,844.5	13.7
Base Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	573,467.6	0.0	0.0	27.6	5,872,322.0	50.1
Lighting	613,004.4	0.0	0.0	29.5	6,277,180.0	52.2
Receptacle	439,233.8	0.0	0.0	21.1	4,497,765.0	37.4
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0	0.0
Totals	1,915,793.6	565,330.4	3.3	100.0	20,212,856.0	170.1

BUILDING 207

EMC ENGINEERS, INC.

PROJECT: FORT McPHERSON & FORT GILLEM ESOS STUDY
LOCATION: FORT McPHERSON
ECO: Computer Simulation Summary

EMC PROJECT: #3105.000
DATE: 04/21/92
FILE: G207ECO
PREPARED BY: DENNIS JONES
CHECKED BY:

CLIENT CONTRACT NO: DACA21-91-C-0097
CLIENT PROJECT ENG: TERRY SEABROOK

Bldg: G207

Area: 298,599 ft²

Run Description	Heating Gas Use (kBtu/yr)	Heating Electric Use (kWh/yr)	Cooling Electric Use (kWh/yr)	Fan Electric Use (kWh/yr)	Pump Electric Use (1) (kWh/yr)	Lighting Electric Use (kWh/yr)	Recept. Electric Use (kWh/yr)	Total Electric Use (kWh/yr)	Peak Electric Demand (kW)	Total Gas Use (MBtu/yr)	Total Energy Use (MBtu/yr)
Baseline	6,317,652	8,200	0	155,220	0	295,749	0	459,169	0	6,318	7,885
Wall Insulation	6,241,559	8,200	0	152,300	0	295,749	0	456,249	0	6,242	7,799
Savings (Loss)	76,093	0	0	2,920	0	0	0	2,920	0	76	86
Roof Insulation	2,208,442	6,937	0	47,943	0	295,749	0	350,629	0	2,208	3,405
Savings (Loss)	4,109,210	1,263	0	107,277	0	0	0	108,540	0	4,109	4,480
Insulated Glass	6,287,502	8,200	0	154,555	0	295,749	0	458,504	0	6,288	7,852
Savings (Loss)	30,150	0	0	665	0	0	0	665	0	30	32
Weatherstripping and Caulk	6,310,442	8,200	0	155,042	0	295,749	0	458,991	0	6,310	7,877
Savings (Loss)	7,210	0	0	178	0	0	0	178	0	7	8
Destratification Fans	5,806,827	7,984	0	219,168	0	295,749	0	522,901	0	5,807	7,591
Savings (Loss)	510,825	216	0	(63,948)	0	0	0	(63,732)	0	511	293
Radiant Heaters	6,010,785	7,794	0	0	0	295,749	0	303,543	0	6,011	7,047
Savings (Loss)	306,867	406	0	155,220	0	0	0	155,626	0	307	838
Loading Dock Seals	5,981,313	8,085	0	146,557	0	295,749	0	450,391	0	5,981	7,518
Savings (Loss)	336,339	115	0	8,663	0	0	0	8,778	0	336	366
Lighting Controls	6,532,542	8,239	0	149,773	0	159,705	0	317,717	0	6,533	7,617
Savings (Loss)	(214,890)	(39)	0	5,447	0	136,044	0	141,452	0	(215)	268
Continuous Boiler Operation	8,905,955	11,988	0	232,830	0	295,749	0	540,567	0	8,906	10,751
Savings (Loss)	(2,588,303)	(3,788)	0	(77,610)	0	0	0	(81,398)	0	(2,588)	(2,866)

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

ROOF & WALL INSULATION (ECO-1)

ADD 0-10 TO WALL DRIVET "

R-15.46 $U = 0.065$

ADD R-19 BATT'S TO ROOF

R-20.93 $U = 0.048$

INSULATED GLASS (ECO-2)

LOWER LEVEL

$SC = 0.38$

$U = 0.51$

WEATHER STRIPPING & CALC (ECO-3)

SPECIFIC INFILTRATION IS 1.53 cfm/in^2

		EXIST	NEW	EXIST	NEW
		in^3/ft^2		CFM	
(12)	DOORS 10'x11'	0.320	0.215	646	434
1952	GLASS	0.052	0.026	155	78
"	WINDOW FRAME	0.093	0.019	298	57
1320	DOOR	0.093	0.019	188	38
				1267	607
				SAVE 560 cfm	

$\text{@ } 2,988,000 \text{ ft}^3 = 0.0133 \text{ ach}$

NEW $1.0 - 0.0133 = \boxed{0.987 \text{ ACH}}$

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE 6207ECO 2DECONTAMINATION FANS (ECO-10) ✓

MEASURED 58°F AT CEILING

65.0°F AT FLOOR

DROP UPPER ZONE FROM 68°F TO 65°F

RADIANT HEATERS (ECO-14) ✓

SEPARATE CALCULATION

LOADING DOCK SEALS (ECO-14) ✓

ASSUME 5 TRUCKS AT BLDG

DOORS 10'W x 11'H → PERIM = 44 ft

ASSUME 6" CRACK WITH TRUCK → 22 ft²/DOORTOTAL LEAK AREA = 110 ft² = 15,840 in² = L

$$Q = L \sqrt{A_{0.1} + B \theta^2}$$



0.0143 3 STAIRS - SHIELDING CLASS 3

65-52 = 13°

0.0171 3 STAIRS

$$Q = L \times 1.53 \text{ cfm/in}^2 = 24,244 \text{ cfm}$$

$$\text{VOLUME} = 20' \times 844' \times 177' = 2,938,000 \text{ ft}^3 \quad \left. \vphantom{\text{VOLUME}} \right\} 0.49 \text{ ACH}$$

LIGHTING CONTROLS (ECO-15) ✓

$$54\% \text{ OF EXISTING} \times 106,817 = \boxed{57,676 \text{ LW}}$$

24 HR BOILER OPERATION (ECO-17)

<HTG>

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ #

EMC # 3105.000

SHEET NO

OF

CALCULATED BY:

KL

CHECKED BY:

DATE:

1/3/92

BLDG. #

207

ECO 10

AIR STRATIFICATION

LOCATION

NORTH END

REQ. TEMP.

TEMP. AT TSTAT

SOURCE

UNIT HEATER

TEMP. AT CEILING

68°F

OPP. HOURS

TO

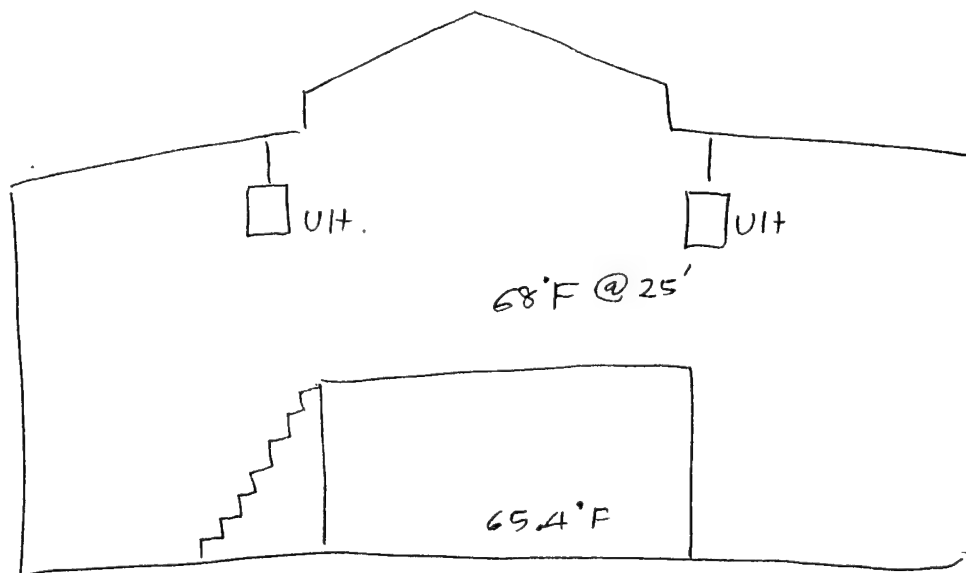
TEMP. AT FLOOR

65.4°F

T'STAT

GAS FIRE

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

BAY 7

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

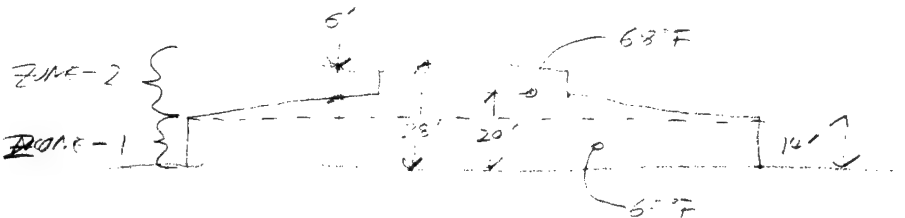
SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE 5-2-7

TRACE - 500 INCH



USE 24' AVG. HEIGHT

ROOF

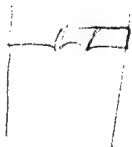


OUTER FILM	0.25
BU ROOFING	0.33
1" GYP FIBER CONC	0.60
INNER FILM	0.75

1.93

U = 0.518

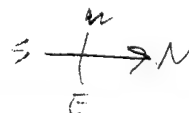
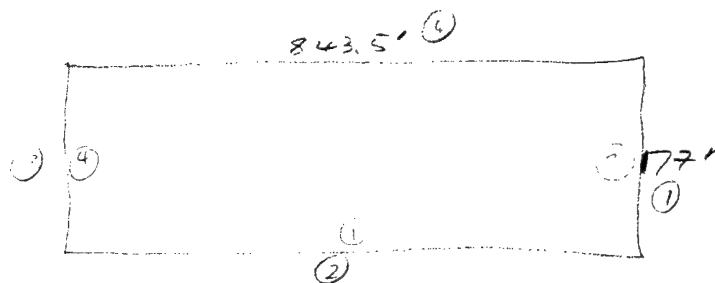
WALLS



OUTER FILM	0.25
12" BRICK	4.44
INNER FILM	0.75

5.44

U = 0.184



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE 5'-0" = 1"

LOWER WINDOWS

(20)	5' x 4'	480	}	704 ft^2	NORTH & SOUTH
(14)	4' x 4'	224			
(10)	5' x 4'	240	}	272 ft^2	EAST & WEST
(2)	4' x 4'	32			

SINGLE PANE - METAL FRAME $U = 1.23$
 $SC = 1.0$

CLEARSTORY WINDOWS

GREEN CORRUGATED FIBERGLASS
OVER CLEAR GLASS

DOUBLE GLAZED

$U = 0.49$

$SC = 0.20$

2' x 8' 3.5' NORTH & SOUTH

LIGHTS

(46) 8' - 2 LAMP FLUORESCENTS PER BAY (7) @ 210 WATTS

$$46 \times 7 \times 210 / 1000 = 67.6 \text{ kW}$$

0 - Job Information

Project: FORT MCPHERSON & GILLEM EEAP #3105.000
Location: ATLANTA, GA
Client: COE - DACA21-9-C-0097
Program User: DENNIS JONES
Comments: BUILDING 207 - FORT GILLEM - BASELINE

-----CARD 08-- Climatic Information -----

	Summer	Winter	Summer	Summer	Winter		Summer	Winter
Weather	Clearness	Clearness	Design	Design	Design	Building	Ground	Ground
Code	Number	Number	Dry Bulb	Wet Bulb	Dry Bulb	Orientation	Reflect	Reflect
ATLANTA								

----- Load Section Alternative #1 -----

---- Load Alternative ----

Number	Description
1	G207 - BASELINE

-----CARD 20-- General Room Parameters -----

	Zone						Acoustic	Floor to	Duplicate	Duplicate	Perimeter
Room	Reference	Room	Floor	Floor	Const	Plenum	Ceiling	Floor	Floors	Rooms per	Depth
Number	Number	Descrip	Length	Width	Type	Height	Resistance	Height	Multiplier	Zone	
1	1	LOWER LEVEL	843.5	177	2	0		14			
2	2	UPPER LEVEL	843.5	177	1	0		7			

-----CARD 21-- Thermostat Parameters -----

	Cooling	Room	Cooling	Cooling	Heating	Heating	Heating	T'stat	Mass /	Carpet
Room	Room	Design	T'stat	T'stat	Room	T'stat	T'stat	Location	No. Hrs	On
Number	Design DB	RH	Driftpoint	Schedule	Design DB	Driftpoint	Schedule	Flag	Average	Floor
1					65		HTG65			NO
2					65		HTG68			NO

-----CARD 22-- Roof Parameters -----

	Roof									
Room	Roof	Equal to	Roof	Roof	Roof	Const	Roof	Roof	Roof	
Number	Number	Floor?	Length	Width	U-Value	Type	Direction	Tilt	Alpha	
2	1	YES			0.518	47	0	90	0.45	

-----CARD 24-- Wall Parameters -----

Room Number	Wall Number	Wall Length	Wall Height	Wall U-Value	Wall	Wall Direction	Wall Tilt	Wall Alpha	Ground
					Constuc Type				Reflectance Multiplier
1	1	177	14	0.184	72	0		0.68	
1	2	843.5	14	0.184	72	90		0.68	
1	3	177.5	14	0.184	72	180		0.68	
1	4	843.5	14	0.184	72	270		0.68	
2	1	843.5	6	0.184	72	270		0.68	
2	2	843.5	6	0.184	72	90		0.68	
2	3	177	10	0.184	72	0		0.68	
2	4	177	10	0.184	72	180		0.68	

-----CARD 25-- Wall/Glass Parameters -----

Room Number	Wall Number	Glass Length	Glass Width	Pct Glass	Glass U-Value	Shading Coefficient	External Shading Type	Internal Shading Type	Percent Solar to Ret. Air	Visible Transmittance	Inside
				or No. of Windows							Visible Reflectance
1	1	704	1	1	1.2	1					
1	2	272	1	1	1.2	1					
1	3	704	1	1	1.2	1.00					
1	4	272	1	1	1.2	1.00	3				
2	1	844	6	1	0.49	0.20					
2	2	844	6	1	0.49	0.20					

-----CARD 26-- Schedules -----

Room Number	People	Lights	Ventilation	Infiltration	Reheat Minimum	Cooling Fans	Heating Fan	Auxiliary Fan	Room Exhaust	Daylighting Controls
M1	PPL1	LGT1		AVAIL		4T08	4T08		ON	

-----CARD 27-- People and Lights -----

Room Number	People Value	People Units	People Sensible	People Latent	Lighting Value	Lighting Units	Lighting	Ballast Factor	Percent Lights to Ret. Air	--- Daylighting ---	
							Fixture Type			Reference Point 1	Reference Point 2
1	30	PEOPLE	250	200							
2					106807	WATTS	SUSFLUOR	1			

-----CARD 29-- Room Airflows -----

Room Number	-----Ventilation-----				-----Infiltration-----				--Reheat Minimum--	
	-----Cooling-----		-----Heating-----		-----Cooling-----		-----Heating-----			
	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
1					1.0	ACH-HR	1.0	ACH-HR		

-----CARD 29--- Room Airflows

Room Number	-----Ventilation-----				-----Infiltration-----				--Reheat Minimum--	
	----Cooling----		----Heating----		----Cooling----		----Heating----			
	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
2					0.5	ACH-HR	0.5	ACH-HR		

-----CARD 32-- Exposed Floor Parameters-

	Exposed	-----Slab-----		-----Exposed Floor-----						
Room	Floor	Perimeter	Loss	Floor	Floor	Const	Temp	Cooling	Heating	Adjacent
Number	Number	Length	Coefficient	Area	U-Value	Type	Flag	Temp	Temp	Room No
1	1	2041	0.63							

-----CARD 33-- External Shading

Shading Type	-----OVERHANG-----				-----VERTICAL FINS-----				
	Glass	Above	Projection	Glass	Projection	Left		Right	Adjacent
	Height	Glass	Out	Width	Left	Out	Right	Out	Flag
3	4	5	12						

----- System Section Alternative #1

-----CARD 39-- System Alternative -----

Number	Description
1	G207 - BASELINE

-----CARD 40--- System Type

		-----OPTIONAL VENTILATION SYSTEM-----					
System		Ventil					Fan
Set	System	Deck	Cooling	Heating	Cooling	Heating	Static
Number	Type	Location	SADBVh	SADBVh	Schedule	Schedule	Pressure
1	FC						

-----CARD 41-- Zone Assignment

[illegible]

-----CARD 42--- Fan SP and Duct Parameters-----

System	Cool	Heat	Return	Mn Exh	Aux	Rm Exh	Cool	Return	Supply	Supply	Return
Set	Fan	Fan	Fan	Fan	Fan	Fan	Fan Mtr	Fan Mtr	Duct	Duct	Air
Number	SP	SP	SP	SP	SP	SP	Loc	Loc	Ht Gn	Loc	Path
1	0.3	0.3									

-----CARD 43--- Airflow Design Temperatures -----

System	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Design
Set	Cooling	Cooling	Heating	Heating	Cooling	Cooling	Preheat	Preheat	Room	Ht Rec
Number	SADB	SADB	SADB	SADB	Lv DB	Lv DB	Lv DB	Lv DB	RH	Diff
1			130	130						

-----CARD 44--- System Options -----

System	Econ	Econ	Max Pct	Direct	Indirect	1st Stage		Exhaust Air Heat Recovery			
Set	Type	On	Outside	Evap	Evap	Evap	Fan	Effectiveness	Control Method		
Number	Flag	Point	Air	Cooling	Cooling	Cooling	Cycling	System	Room	System	Room
1	NONE										

-----CARD 45--- Equipment Schedules -----

System	Main		Direct	Indirect	Auxiliary	Main	Main		Auxiliary
Set	Cooling		Evap	Evap	Cooling	Heating	Preheat	Reheat	Mech. Heating
Number	Coil	Economizer	Coil	Coil	Coil	Coil	Coil	Coil	Humidity Coil
1	OFF	OFF				4T08			

-----CARD 46--- EMS/BAS Schedules -----

System	Discrim	Night	Optimum	Optimum				System HR	Room HR
Set	Control	Purge	Start	Stop	On Period	Pattern	Maximum	Exhaust	Exhaust
Number	Schedule	Schedule	Schedule	Schedule	Schedule	Length	Off Time	Schedule	Schedule
1									

-----CARD 49--- Heating Capacity Overrides -----

System	---MAIN HEATING---	---PREHEAT---	---REHEAT---	---HUMIDIFICATION---	---AUX HEATING---	
Set	Capacity	Capacity	Capacity	Capacity	Capacity	
Number	Value	Units	Value	Units	Value	Units
1	3000	MBH				

----- Equipment Section Alternative #1 -----

-----CARD 59--- Equipment Description / TOD Schedules -----

Alternative	Elec Consump	Elec Demand	Demand
Number	Time of Day	Time of Day	Limit
	Schedule	Schedule	Max KW
			Alternative Description

-----CARD 65-- Heating Load Assignment -----

Load	All Coil										
Assignment	Loads To	-Group 1-	-Group 2-	-Group 3-	-Group 4-	-Group 5-	-Group 6-	-Group 7-	-Group 8-	-Group 9-	
Reference	Heating Ref	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	Begin End	
1	1	1 1									

-----CARD 67-- Heating Equipment Parameters -----

Heat	Equip	Number	HW Pmp		Energy				Seq	Switch		Demand		
Ref	Code	Of	Full Ld		Cap'y		Rate		Order	over	Hot	Misc.	Limit	
Number	Name	Units	Value	Units	Value	Units	Value	Units	Number	Control	Strg	Acc.	Cogen	Number
1	EQ2001	1	1.5	HP	3000	MBH	80	PCTEFF						

-----CARD 69-- Fan Equipment Parameters -----

System							
Set	Cooling	Heating	Return	Exhaust	Auxiliary	Room	Optional
Number	Fan	Fan	Fan	Fan	Supply	Exhaust	Ventilation
1	EQ4003	EQ4003					

Utility Description Reference Table

Schedules:

4T08

4T08 (Utility file not found)

AVAIL AVAILABLE (100%)

HTG65 (Utility file not found)

HTG68 HEATING ONLY (T-STAT AT 68)

LGT1

OFF ALWAYS OFF

ON AVAILABLE (100%)

PPL1

System:

FC FAN COIL

Heating:

EQ2001 GAS FIRE TUBE HOT WATER

Fan:

EQ4003 (Utility file not found)

Schedule Name: 4T08

Project:

Location:

Client:

Program User:

Comments: NOV THRU APRIL - 4 AM TO 8 PM

Starting Month: NOV Ending Month: APR

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0	0
4	100
20	0
24	

Sample Name: AVAIL

Project: AVAILABLE (100)

Location:

Client:

Program User:

Comments:

Starting Month: JAN Ending Month: HTG

Starting Day Type: DSGN Ending Day Type: SUN

Hour Util Percent

0 100

24

Schedule Name: HTG68

Project: HEATING ONLY (T-STAT AT 68)

Location:

Client:

Program User:

Comments: HEATING ONLY SCHEDULE - T-STAT

Starting Month: JAN Ending Month: MAY

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 68

24

Starting Month: JUN Ending Month: SEP

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 35

24

Starting Month: OCT Ending Month: DEC

Starting Day Type: DSGN Ending Day Type: SUN

Hour Temperature

0 68

24

Module Name: LGT1
Project:
Location:
Client:
Program User:
Comments: OFFICE LIGHTING

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: WKDY

Hour Util Percent

0	5
7	80
8	100
12	80
13	100
16	80
17	40
18	5
24	

Starting Month: JAN Ending Month: DEC
Starting Day Type: SAT Ending Day Type: SUN

Util Percent

0	5
24	

Schedule Name: OFF
Project: ALWAYS OFF
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: HTG
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util	Percent
0		0
24		

Source Name: ON
Project: AVAILABLE (100)
Location:
Client:
Program User:
Comments:

Starting Month: JAN Ending Month: DEC
Starting Day Type: DSGN Ending Day Type: SUN

Hour	Util	Percent
0		100
24		

Schedule Name: PPL1

Project:

Location:

Client:

Program User: D JONES

Comments: OFFICE PEOPLE SCHEDULE

Starting Month: JAN Ending Month: DEC

Starting Day Type: DSGM Ending Day Type: WKDY

Hour Util Percent

0	0
7	50
8	100
11	80
12	40
13	80
14	100
16	70
17	30
18	0
24	

Starting Month: JAN Ending Month: DEC

Starting Day Type: SAT Ending Day Type: SUN

Hour Util Percent

0	0
24	

**
**
**
**
**
**

TRACE 600 ANALYSIS

by

**

FORT MCPHERSON & GILLEM EEAP #3105.000
ATLANTA, GA
COE - DACA21-9-C-0097
DENNIS JONES
BUILDING 207 - FORT GILLEM - BASELINE

Weather File Code: ATLANTA.
Location:
Latitude: 33.0 (deg)
Longitude: 84.0 (deg)
Time Zone: 6
Elevation: 1,005 (ft)
Barometric Pressure: 28.8 (in. Hg)

Summer Clearness Number: 0.90
Winter Clearness Number: 0.90
Summer Design Dry Bulb: 92 (F)
Summer Design Wet Bulb: 74 (F)
Winter Design Dry Bulb: 22 (F)
Summer Ground Relectance: 0.20
Winter Ground Relectance: 0.20

Air Density: 0.0731 (Lbm/cuft)
Air Specific Heat: 0.2444 (Btu/lbm/F)
Density-Specific Heat Prod: 1.0727 (Btu-min./hr/cuft/F)
Latent Heat Factor: 4,721.8 (Btu-min./hr/cuft)
Enthalpy Factor: 4.3883 (Lb-min./hr/cuft)

Design Simulation Period: June To November
System Simulation Period: January To December
Cooling Load Methodology: TETD/Time Averaging

Time/Date Program was Run: 6:57:34 3/20/92
Dataset Name: G207 .TM

AIRFLOW - ALTERNATIVE 1
G207 - BASELINE

----- SYSTEM SUMMARY -----
(Design Airflow Quantities)

System Number	System Type	Main					Auxil. Supply	Room Exhaust
		Outside Airflow (Cfm)	Cooling Airflow (Cfm)	Heating Airflow (Cfm)	Return Airflow (Cfm)	Exhaust Airflow (Cfm)	Airflow (Cfm)	Airflow (Cfm)
1 FC		0	417,430	417,430	460,976	43,546	0	0
Totals		0	417,430	417,430	460,976	43,546	0	0

CAPACITY - ALTERNATIVE 1
G207 - BASELINE

----- SYSTEM SUMMARY -----
(Design Capacity Quantities)

		Cooling				Heating						
		Main Sys.	Aux. Sys.	Opt. Vent	Cooling	Main Sys.	Aux. Sys.	Preheat	Reheat	Humidif.	Opt. Vent	Heating
System	System	Capacity	Capacity	Capacity	Totals	Capacity	Capacity	Capacity	Capacity	Capacity	Capacity	Totals
Number	Type	(Tons)	(Tons)	(Tons)	(Tons)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Btuh)
1	FC	563.7	0.0	0.0	563.7	-3,000,000	0	0	0	0	0	-3,000,000
Totals		563.7	0.0	0.0	563.7	-3,000,000	0	0	0	0	0	-3,000,000

The building peaked at hour 14 month 6 with a capacity of 563.7 tons

ENGINEERING CHECKS - ALTERNATIVE 1
G207 - BASELINE

----- ENGINEERING CHECKS -----

System Number	Main/ Auxiliary	System Type	Percent Outside Air	Cooling				Heating		Floor Area Sq Ft
				Cfm/ Sq Ft	Cfm/ Ton	Sq Ft /Ton	Btuh/ Sq Ft	Cfm/ Sq Ft	Btuh/ Sq Ft	
1	Main	FC	0.00	1.40	740.5	529.7	22.65	1.40	-10.05	298,599

Item 1 Block FC - FAN COIL

***** COOLING COIL PEAK ***** CLG SPACE PEAK ***** HEATING COIL PEAK *****

Peaked at Time ==> Mo/Hr: 6/14 * Mo/Hr: 6/14 * Mo/Hr: 13/ 1
Outside Air ==> OADB/WB/HR: 96/ 73/ 91.0 * OADB: 96 * OADB: 22

	Space	Ret. Air	Ret. Air	Net	Perct		Space	Perct		Space Peak	Coil Peak	Perct
	Sens.+Lat.	Sensible	Latent	Total	Of Tot		Sensible	Of Tot		Space Sens	Tot Sens	Of Tot
	(Btuh)	(Btuh)	(Btuh)	(Btuh)	(%)		(Btuh)	(%)		(Btuh)	(Btuh)	(%)
Envelope Loads												
Skylite Solr	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Skylite Cond	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Roof Cond	4,122,070	0		4,122,070	60.94	*	4,122,070	67.47	*	-3,325,497	-3,325,497	11.43
Glass Solar	243,936	0		243,936	3.61	*	234,176	3.83	*	0	0	0.00
Glass Cond	150,425	0		150,425	2.22	*	151,830	2.49	*	-334,165	-334,165	1.15
Wall Cond	219,637	0		219,637	3.25	*	244,625	4.00	*	-238,697	-238,697	0.82
Partition	0			0	0.00	*	0	0.00	*	0	0	0.00
Exposed Floor	0			0	0.00	*	0	0.00	*	-55,291	-55,291	0.19
Infiltration	1,652,943			1,652,943	24.44	*	984,659	16.12	*	-2,008,554	-2,008,554	6.90
Sub Total==>	6,389,010	0		6,389,010	94.45	*	5,737,360	93.91	*	-5,962,204	-5,962,204	20.49
Internal Loads												
Lights	364,532	0		364,532	5.39	*	364,532	5.97	*	0	0	0.00
People	10,800			10,800	0.16	*	7,500	0.12	*	0	0	0.00
Misc	0	0	0	0	0.00	*	0	0.00	*	0	0	0.00
Sub Total==>	375,332	0	0	375,332	5.55	*	372,032	6.09	*	0	0	0.00
Ceiling Load	0	0		0	0.00	*	0	0.00	*	0	0	0.00
Outside Air	0	0	0	0	0.00	*	0	0.00	*	0	0	0.00
Fan Heat				0	0.00	*		0.00	*		0	0.00
Ret. Fan Heat		0		0	0.00	*		0.00	*		0	0.00
Duct Heat PkUp		0		0	0.00	*		0.00	*		0	0.00
OV/UNDR Sizing	0			0	0.00	*	0	0.00	*	-23,142,764	-23,142,764	79.51
Exhaust Heat		0	0	0	0.00	*		0.00	*		0	0.00
Terminal Bypass		0	0	0	-0.00	*		0.00	*		0	0.00
Grand Total==>	6,764,342	0	0	6,764,342	100.00	*	6,109,393	100.00	*	-29,104,968	-29,104,968	100.00

-----COOLING COIL SELECTION-----

	Total Capacity	Sens Cap.	Coil Airfl	Entering DB/WB/HR	Leaving DB/WB/HR	Gross Total	Glass (sf)	(%)
	(Tons)	(Mbh)	(cfm)	Deg F Deg F Grains	Deg F Deg F Grains	Floor	298,599	
Main Clg	563.7	6,764.3	417,430	75.1 62.7 68.7	61.2 57.3 66.7	Part	0	
Aux Clg	0.0	0.0	0	0.0 0.0 0.0	0.0 0.0 0.0	ExFlr	2,041	
Opt Vent	0.0	0.0	0	0.0 0.0 0.0	0.0 0.0 0.0	Roof	149,300	0 0
Totals	563.7	6,764.3				Wall	42,243	12,074 29

-----HEATING COIL SELECTION-----

	Capacity	Coil Airfl	Ent	Lvg	Type	Cooling	Heating	Clg % OA	0.0	Type	Clg	Htg
	(Mbh)	(cfm)	Deg F	Deg F	Vent	0	0	Clg Cfm/Sqft	1.40	SADB	61.4	130.0
Main Htg	-3,000.0	417,430	123.3	130.0	Infil	43,546	43,546	Clg Cfm/Ton	740.52	Plenum	75.0	65.0
Aux Htg	0.0	0	0.0	0.0	Supply	417,430	417,430	Clg Sqft/Ton	529.72	Return	75.0	65.0
Preheat	-0.0	417,430	65.0	61.2	Mincfm	0	0	Clg Btuh/Sqft	22.65	Ret/OA	75.0	65.0
Reheat	0.0	0	0.0	0.0	Return	417,430	417,430	No. People	30	Runarnd	75.0	65.0
Humidif	0.0	0	0.0	0.0	Exhaust	0	0	Htg % OA	0.0	Fn MtrTD	0.0	0.0
Control	0.0	0	0.0	0.0	Rm Exh	0	0	Htg Cfm/Sqft	1.40	Fn BldTD	0.0	0.0
Totals	-3,000.0				Auxil	0	0	Htg Btuh/Sqft	-10.05	Fn Frict	0.1	0.1

-----AIRFLOWS (cfm)-----

-----ENGINEERING CHECKS-----

-----TEMPERATURES (F)-----

HEATING LOADS AT COIL PEAK - ALTERNATIVE 1
G207 - BASELINE

----- A I R F L O W H E A T I N G L O A D S -----
(At time of Coil Peak)

		--- Ventilation ---		---- Op. Vent.----		----- Reheat -----		---- Humidif. ----		Total
Room Number	Description	Airflow (Cfm)	Sensible (Btuh)	Airflow (Cfm)	Sensible (Btuh)	Airflow (Cfm)	Sensible (Btuh)	Airflow (Cfm)	Latent (Btuh)	
1	LOWER LEVEL	0	0	0	0	0	0	0	0	0
Zone 1	Total/Ave.	0	0	0	0	0	0	0	0	0
Zone 1	Block	0	0	0	0	0	0	0	0	0
2	UPPER LEVEL	0	0	0	0	0	0	0	0	0
Zone 2	Total/Ave.	0	0	0	0	0	0	0	0	0
Zone 2	Block	0	0	0	0	0	0	0	0	0
System 1	Total/Ave.	0	0	0	0	0	0	0	0	0
System 1	Block	0	0	0	0	0	0	0	0	0

HEATING AIRFLOW HEAT GAIN/LOSS - ALTERNATIVE 1
G207 - BASELINE

----- A I R F L O W H E A T G A I N A N D L O S S -----
(At time of Coil Peak)

		----- Heating -----										
Room Number	Description	Supply Fan Heat	Return Fan Heat	System Exhaust Heat Loss	Total	System Exhaust Airflow	Room Exhaust Airflow	Ducted Airflow	Plenum Airflow	Run Around Airflow	Corridor Airflow	System Return Airflow
		(Btuh)	(Btuh)	(Btuh)	(Btuh)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)	(Cfm)
1	LOWER LEVEL	0	0	0	0	0	0	53,304	0	0	0	53,304
Zone 1	Total/Ave.	0	0	0	0	0	0	53,304	0	0	0	53,304
Zone 1	Block	0	0	0	0	0	0	53,304	0	0	0	53,304
2	UPPER LEVEL	0	0	0	0	0	0	364,127	0	0	0	364,127
Zone 2	Total/Ave.	0	0	0	0	0	0	364,127	0	0	0	364,127
Zone 2	Block	0	0	0	0	0	0	364,127	0	0	0	364,127
System 1	Total/Ave.	0	0	0	0	0	0	417,430	0	0	0	417,430
System 1	Block	0	0	0	0	0	0	417,430	0	0	0	417,430

ROOM PSYCHROMETRICS - ALTERNATIVE 1
 - BASELINE

----- PSYCHROMETRIC STATE POINTS -----

Room 1

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	75.0	64.3	56.7	76.6	30.0	
Main System						
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	75.0	64.3	56.7	76.6	30.0	
Outdoor Air	92.3	74.4	44.2	105.0	38.7	
Return/Outdoor Air Mix	75.0	64.3	56.7	76.6	30.0	
Blow through Fan						0.1
Entering Coil	75.1	64.3	56.5	76.6	30.0	
Leaving Coil	54.9	53.6	92.5	61.9	22.8	
Draw Through Fan						0.0
Duct Frictional Heat						0.1
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	55.0	53.7	92.2	61.9	22.8	
Supply Air	55.0	53.7	92.2	61.9	22.8	
Percent Outside Air		0.00 (%)				
Sensible Heat Ratio (SHR)		0.672				
Percent Supply Air Bypassing Coil		0.00 (%)				
Coil Airflow		53,304 (Cfm)				

 * THE PSYCHROMETRIC LOOP DID NOT CLOSE *
 * SUPPLY AIR TEMPERATURE RESET *

ROOM PSYCHROMETRICS - ALTERNATIVE 1
 G207 - BASELINE

----- P S Y C H R O M E T R I C S T A T E P O I N T S -----

Room 2

	Dry Bulb (F)	Wet Bulb (F)	Relat. Humid. (%)	Humid. Ratio (GR)	Enthalpy (Btu/Lb)	Temp. Diff. (F)
Space	75.0	62.4	50.0	67.5	28.5	
Main System						
Return Air Heat Pickup						0.0
Return Fan						0.0
Return Air	75.0	62.4	50.0	67.5	28.5	
Outdoor Air	95.6	73.0	34.7	91.0	37.3	
Return/Outdoor Air Mix	75.0	62.4	50.0	67.5	28.5	
Blow through Fan						0.1
Entering Coil	75.1	62.4	49.9	67.5	28.6	
Leaving Coil	62.2	57.8	77.4	67.3	25.4	
Draw Through Fan						0.0
Duct Frictional Heat						0.1
Supply Duct Heat Gain						0.0
Cold Deck Supply Air	62.3	57.8	77.1	67.3	25.4	
Supply Air	62.3	57.8	77.1	67.3	25.4	
Percent Outside Air		0.00	(%)			
Sensible Heat Ratio (SHR)		0.973				
Percent Supply Air Bypassing Coil		0.00	(%)			
Coil Airflow		364,127	(Cfm)			

BUILDING U-VALUES - ALTERNATIVE 1
- BASELINE

----- B U I L D I N G U - V A L U E S -----

		Room U-Values (Btu/hr/sqft/F)										Room Mass (lb/ sqft)	Room Capac. (Btu/ sqft/F)
Room Number	Description	Part.	ExFlr	Summr Skylt	Wintr Skylt	Roof	Summr Windo	Wintr Windo	Wall	Ceil.			
1	LOWER LEVEL	0.000	0.630	0.000	0.000	0.000	1.200	1.333	0.184	0.000	14.3	2.77	
Zone	1 Total/Ave.	0.000	0.630	0.000	0.000	0.000	1.200	1.333	0.184	0.000	14.3	2.77	
	2 UPPER LEVEL	0.000	0.000	0.000	0.000	0.518	0.490	0.511	0.184	0.000	13.5	5.81	
Zone	2 Total/Ave.	0.000	0.000	0.000	0.000	0.518	0.490	0.511	0.184	0.000	13.5	5.81	
System	1 Total/Ave.	0.000	0.630	0.000	0.000	0.518	0.605	0.644	0.184	0.000	13.9	4.29	
Building		0.000	0.630	0.000	0.000	0.518	0.605	0.644	0.184	0.000	13.9	4.29	

BUILDING AREAS - ALTERNATIVE 1
G207 - BASELINE

----- B U I L D I N G A R E A S -----

Room Number	Description	Number of Duplicate		Floor Area/Dupl Room	Total Floor Area	Partition Area	Exposed Floor Area	Skylight Area	Skl /Rf	Net Roof Area	Window Area	Win /Wl	Net Wall Area
		Flr	Rm	(sqft)	(sqft)	(sqft)	(sqft)	(sqft)	(%)	(sqft)	(sqft)	(%)	(sqft)
1	LOWER LEVEL	1	1	149,300	149,300	0	2,041	0	0	0	1,952	7	26,629
Zone	1 Total/Ave.				149,300	0	2,041	0	0	0	1,952	7	26,629
2	UPPER LEVEL	1	1	149,300	149,300	0	0	0	0	149,300	10,122	74	3,540
Zone	2 Total/Ave.				149,300	0	0	0	0	149,300	10,122	74	3,540
System	1 Total/Ave.				298,599	0	2,041	0	0	149,300	12,074	29	30,169
Building					298,599	0	2,041	0	0	149,300	12,074	29	30,169

ASHRAE 90 ANALYSIS - ALTERNATIVE 1
G207 - BASELINE

----- A S H R A E 9 0 A N A L Y S I S -----

Overall Roof U-Value = 0.518 (Btu/Hr/Sq Ft/F)
Overall Wall U-Value = 0.304 (Btu/Hr/Sq Ft/F)
Overall Building U-Value = 0.471 (Btu/Hr/Sq Ft/F)

Roof Overall Thermal Transfer Value (OTTVr) = 47.78 (Btu/Hr/Sq Ft)
Wall Overall Thermal Transfer Value (OTTVw) = 20.59 (Btu/Hr/Sq Ft)

SYSTEM LOAD PROFILE - ALTERNATIVE 1
G207 - BASELINE

Main System 1 FC FAN COIL

Percent Design Load	---- Cooling Load ----			----- Heating Load -----			---- Cooling Airflow ----			----- Heating Airflow -----		
	Cap. (Ton)	Hours (%)	Hours	Capacity (Btuh)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours	Cap. (Cfm)	Hours (%)	Hours
0 - 5	28.2	0	0	-150,000	7	158	20,871.5	0	0	0.0	0	0
5 - 10	56.4	0	0	-300,000	2	54	41,743.0	0	0	0.0	0	0
10 - 15	84.6	0	0	-450,000	9	225	62,614.5	0	0	0.0	0	0
15 - 20	112.7	0	0	-600,000	2	46	83,486.0	0	0	0.0	0	0
20 - 25	140.9	0	0	-750,000	2	44	104,357.5	0	0	0.0	0	0
25 - 30	169.1	0	0	-900,000	0	0	125,229.0	0	0	0.0	0	0
30 - 35	197.3	0	0	-1,050,000	3	83	146,100.5	0	0	0.0	0	0
35 - 40	225.5	0	0	-1,200,000	1	28	166,972.1	0	0	0.0	0	0
40 - 45	253.7	0	0	-1,350,000	3	67	187,843.6	0	0	0.0	0	0
45 - 50	281.8	0	0	-1,500,000	2	50	208,715.1	0	0	0.0	0	0
50 - 55	310.0	0	0	-1,650,000	2	51	229,586.6	0	0	0.0	0	0
55 - 60	338.2	0	0	-1,800,000	1	25	250,458.1	0	0	0.0	0	0
60 - 65	366.4	0	0	-1,950,000	1	30	271,329.6	0	0	0.0	0	0
65 - 70	394.6	0	0	-2,100,000	2	51	292,201.1	0	0	0.0	0	0
70 - 75	422.8	0	0	-2,250,000	2	50	313,072.7	0	0	0.0	0	0
75 - 80	451.0	0	0	-2,400,001	1	21	333,944.2	0	0	0.0	0	0
80 - 85	479.1	0	0	-2,550,000	4	90	354,815.7	0	0	0.0	0	0
85 - 90	507.3	0	0	-2,700,001	4	93	375,687.2	0	0	0.0	0	0
90 - 95	535.5	0	0	-2,850,000	1	24	396,558.7	0	0	0.0	0	0
95 - 100	563.7	0	0	-3,000,000	51	1,219	417,430.2	100	2,896	0.0	0	0
Hours Off	0.0	0	8,760	0	0	6,351	0.0	0	5,864	0.0	0	8,760

LOADING COOL-HEAT DEMAND - ALTERNATIVE 1
- BASELINE

January			----- Design -----		----- Weekday -----		----- Saturday-----		----- Sunday -----		----- Monday -----	
Hour	OADB	OAWB	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
1	33.4	30.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2	32.1	29.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3	31.7	29.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4	31.9	29.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	32.6	30.3	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
6	33.6	31.3	-3,000,001	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
7	35.0	32.6	-3,000,001	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
8	36.6	34.4	-3,000,000	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
9	38.5	36.3	-3,000,000	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,001	0.0
10	40.4	37.7	-3,000,000	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,001	0.0	-2,999,999	0.0
11	42.3	38.7	-3,000,000	0.0	-3,000,000	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,000	0.0
12	44.2	39.6	-1,671,055	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
13	45.8	40.5	-390,510	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
14	47.2	41.1	-392,342	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
15	48.2	41.6	-390,206	0.0	-1,099,761	0.0	-3,000,000	0.0	-3,000,000	0.0	-1,311,497	0.0
16	48.9	41.8	-385,015	0.0	-1,029,321	0.0	-1,588,414	0.0	-1,588,414	0.0	-1,029,321	0.0
17	49.1	41.9	-383,084	0.0	-1,573,079	0.0	-1,846,474	0.0	-1,846,474	0.0	-1,573,079	0.0
18	48.7	41.9	-383,084	0.0	-2,046,448	0.0	-2,174,039	0.0	-2,174,039	0.0	-2,046,448	0.0
19	47.4	41.7	-2,010,847	0.0	-2,405,937	0.0	-2,405,937	0.0	-2,405,937	0.0	-2,405,937	0.0
20	45.5	40.5	-2,344,434	0.0	-2,558,474	0.0	-2,558,474	0.0	-2,558,474	0.0	-2,558,474	0.0
21	43.1	38.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
22	40.4	36.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23	37.7	34.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
24	35.3	32.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

February			----- Design -----		----- Weekday -----		----- Saturday-----		----- Sunday -----		----- Monday -----	
Hour	OADB	OAWB	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
1	37.5	34.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2	36.0	33.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3	34.7	31.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4	33.6	30.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	32.8	30.1	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
6	32.2	29.8	-3,000,001	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
7	32.1	29.6	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
8	32.5	30.3	-3,000,001	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,001	0.0	-2,999,999	0.0
9	33.9	31.6	-2,999,999	0.0	-2,999,999	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,001	0.0
10	36.0	33.0	-3,000,000	0.0	-3,000,001	0.0	-2,999,999	0.0	-2,999,999	0.0	-3,000,001	0.0
11	38.5	34.8	-3,000,000	0.0	-3,000,000	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,000	0.0
12	41.3	36.5	-2,178,139	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
13	43.8	38.1	-394,747	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
14	45.9	39.5	-396,207	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
15	47.2	40.4	-393,782	0.0	-1,323,369	0.0	-3,000,000	0.0	-3,000,000	0.0	-1,400,536	0.0
16	47.7	40.6	-387,556	0.0	-976,724	0.0	-1,609,438	0.0	-1,609,438	0.0	-976,724	0.0
17	47.5	40.2	-383,084	0.0	-1,377,560	0.0	-1,650,955	0.0	-1,650,955	0.0	-1,377,560	0.0
18	47.0	39.8	-383,084	0.0	-2,095,758	0.0	-2,223,348	0.0	-2,223,348	0.0	-2,095,758	0.0
19	46.2	39.9	-574,013	0.0	-2,435,463	0.0	-2,435,463	0.0	-2,435,463	0.0	-2,435,463	0.0
20	45.1	39.7	-2,426,448	0.0	-2,591,217	0.0	-2,591,217	0.0	-2,591,217	0.0	-2,591,217	0.0
21	43.8	39.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
22	42.3	38.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23	40.7	37.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
24	39.1	35.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

LOADING COOL-HEAT DEMAND - ALTERNATIVE 1
- BASELINE

May			----- Design -----			----- Weekday -----			----- Saturday-----			----- Sunday -----			----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	66.6	62.3		0		0.0		0		0.0		0		0.0		0		0.0
2	64.5	60.4		0		0.0		0		0.0		0		0.0		0		0.0
3	62.7	59.1		0		0.0		0		0.0		0		0.0		0		0.0
4	61.2	58.1		0		0.0		0		0.0		0		0.0		0		0.0
5	60.0	57.1		0		0.0		0		0.0		0		0.0		0		0.0
6	59.3	56.6		0		0.0		0		0.0		0		0.0		0		0.0
7	59.0	56.5		0		0.0		0		0.0		0		0.0		0		0.0
8	59.5	56.6		0		0.0		0		0.0		0		0.0		0		0.0
9	60.9	56.6		0		0.0		0		0.0		0		0.0		0		0.0
10	63.0	57.2		0		0.0		0		0.0		0		0.0		0		0.0
11	65.7	58.1		0		0.0		0		0.0		0		0.0		0		0.0
12	68.7	59.8		0		0.0		0		0.0		0		0.0		0		0.0
13	71.7	61.6		0		0.0		0		0.0		0		0.0		0		0.0
14	74.5	63.4		0		0.0		0		0.0		0		0.0		0		0.0
15	76.6	64.8		0		0.0		0		0.0		0		0.0		0		0.0
16	78.0	65.6		0		0.0		0		0.0		0		0.0		0		0.0
17	78.5	65.6		0		0.0		0		0.0		0		0.0		0		0.0
18	78.2	65.8		0		0.0		0		0.0		0		0.0		0		0.0
19	77.5	65.6		0		0.0		0		0.0		0		0.0		0		0.0
20	76.3	66.1		0		0.0		0		0.0		0		0.0		0		0.0
21	74.8	67.2		0		0.0		0		0.0		0		0.0		0		0.0
22	73.0	66.4		0		0.0		0		0.0		0		0.0		0		0.0
23	70.9	65.4		0		0.0		0		0.0		0		0.0		0		0.0
24	68.7	64.0		0		0.0		0		0.0		0		0.0		0		0.0
June			----- Design -----			----- Weekday -----			----- Saturday-----			----- Sunday -----			----- Monday -----			
Hour	OADB	OAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	73.0	67.9		0		0.0		0		0.0		0		0.0		0		0.0
2	71.2	66.1		0		0.0		0		0.0		0		0.0		0		0.0
3	69.7	65.2		0		0.0		0		0.0		0		0.0		0		0.0
4	68.5	64.3		0		0.0		0		0.0		0		0.0		0		0.0
5	67.8	64.2		0		0.0		0		0.0		0		0.0		0		0.0
6	67.6	64.2		0		0.0		0		0.0		0		0.0		0		0.0
7	68.1	64.8		0		0.0		0		0.0		0		0.0		0		0.0
8	69.4	65.7		0		0.0		0		0.0		0		0.0		0		0.0
9	71.6	66.2		0		0.0		0		0.0		0		0.0		0		0.0
10	74.2	67.2		0		0.0		0		0.0		0		0.0		0		0.0
11	77.2	68.5		0		0.0		0		0.0		0		0.0		0		0.0
12	80.2	70.0		0		0.0		0		0.0		0		0.0		0		0.0
13	82.8	70.8		0		0.0		0		0.0		0		0.0		0		0.0
14	85.0	71.6		0		0.0		0		0.0		0		0.0		0		0.0
15	86.3	72.3		0		0.0		0		0.0		0		0.0		0		0.0
16	86.8	72.1		0		0.0		0		0.0		0		0.0		0		0.0
17	86.6	71.7		0		0.0		0		0.0		0		0.0		0		0.0
18	85.8	71.5		0		0.0		0		0.0		0		0.0		0		0.0
19	84.7	71.2		0		0.0		0		0.0		0		0.0		0		0.0
20	83.2	71.5		0		0.0		0		0.0		0		0.0		0		0.0
21	81.4	71.7		0		0.0		0		0.0		0		0.0		0		0.0
22	79.3	71.4		0		0.0		0		0.0		0		0.0		0		0.0
23	77.2	70.5		0		0.0		0		0.0		0		0.0		0		0.0
24	75.1	69.1		0		0.0		0		0.0		0		0.0		0		0.0

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
G207 - BASELINE

July			----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	QAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	72.0	69.3	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
2	70.5	68.0	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
3	69.4	67.1	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
4	68.5	66.4	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
5	67.9	66.0	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
6	67.7	65.9	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
7	68.1	66.3	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
8	69.1	67.3	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
9	70.8	68.0	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
10	72.9	69.1	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
11	75.2	70.5	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
12	77.5	71.7	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
13	79.6	72.7	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
14	81.3	73.5	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
15	82.3	73.7	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
16	82.7	73.5	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
17	82.5	73.1	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
18	82.0	72.6	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
19	81.1	73.2	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
20	79.9	73.8	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
21	78.5	73.9	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
22	76.9	73.1	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
23	75.2	71.9	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
24	73.5	70.8	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		

August			----- Design -----				----- Weekday -----				----- Saturday-----				----- Sunday -----				----- Monday -----			
Hour	OADB	QAWB	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton	Htg	Btuh	Clg	Ton
1	72.7	70.2	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
2	71.2	69.0	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
3	69.9	68.0	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
4	68.8	67.1	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
5	68.0	66.6	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
6	67.5	66.2	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
7	67.3	66.1	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
8	67.8	66.5	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
9	69.1	67.0	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
10	71.2	67.8	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
11	73.8	68.7	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
12	76.5	70.0	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
13	79.1	71.2	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
14	81.1	72.6	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
15	82.5	73.6	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
16	83.0	73.7	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
17	82.8	73.5	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
18	82.3	73.5	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
19	81.5	73.1	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
20	80.4	73.7	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
21	79.1	74.9	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
22	77.6	73.9	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
23	76.0	72.7	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		
24	74.3	71.3	0	0.0			0	0.0			0	0.0			0	0.0			0	0.0		

LOADING COOL-HEAT DEMAND - ALTERNATIVE 1
- BASELINE

September			----- Design -----			----- Weekday -----			----- Saturday-----			----- Sunday -----			----- Monday -----		
Hour	QADB	QAWB	Htg Btuh	Clg Ton		Htg Btuh	Clg Ton		Htg Btuh	Clg Ton		Htg Btuh	Clg Ton		Htg Btuh	Clg Ton	
1	69.8	66.1	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
2	68.0	64.5	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
3	66.3	63.0	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
4	64.9	61.9	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
5	63.9	61.3	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
6	63.2	61.0	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
7	63.0	60.8	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
8	63.4	61.4	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
9	64.7	61.8	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
10	66.6	62.1	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
11	69.1	62.9	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
12	71.8	63.7	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
13	74.5	65.5	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
14	77.0	67.1	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
15	78.9	68.2	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
16	80.2	68.6	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
17	80.6	68.5	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
18	80.4	68.9	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
19	79.7	70.0	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
20	78.7	71.2	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
21	77.3	71.6	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
22	75.6	70.5	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
23	73.7	69.4	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
24	71.8	67.7	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	

October			----- Design -----			----- Weekday -----			----- Saturday-----			----- Sunday -----			----- Monday -----		
Hour	QADB	QAWB	Htg Btuh	Clg Ton		Htg Btuh	Clg Ton		Htg Btuh	Clg Ton		Htg Btuh	Clg Ton		Htg Btuh	Clg Ton	
1	54.8	51.3	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
2	52.9	49.6	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
3	51.2	48.2	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
4	49.8	47.2	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
5	48.8	46.2	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
6	48.2	45.7	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
7	47.9	45.6	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
8	48.5	46.2	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
9	50.3	47.3	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
10	52.9	48.7	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
11	56.2	49.9	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
12	59.6	51.5	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
13	62.9	53.5	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
14	65.5	55.2	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
15	67.3	56.3	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
16	67.9	56.6	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
17	67.7	56.4	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
18	67.0	56.6	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
19	66.0	57.6	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
20	64.6	57.9	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
21	62.9	57.3	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
22	61.0	56.0	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
23	59.0	54.8	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
24	56.9	53.0	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	

BUILDING COOL-HEAT DEMAND - ALTERNATIVE 1
G207 - BASELINE

November		----- Design -----		----- Weekday -----		----- Saturday-----		----- Sunday -----		----- Monday -----	
Hour	OADB OAWB	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
1	48.7 45.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2	46.9 44.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3	45.5 42.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4	44.6 41.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	44.4 42.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,001	0.0	-3,000,001	0.0	-3,000,001	0.0
6	44.8 42.7	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
7	45.9 43.9	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
8	47.8 46.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
9	50.2 48.0	-2,814,831	0.0	-2,961,015	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
10	52.9 49.9	-388,778	0.0	-2,267,478	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
11	55.8 51.1	-395,912	0.0	-32,391	0.0	-2,598,462	0.0	-2,598,462	0.0	-1,447,584	0.0
12	58.5 52.0	-133,777	0.0	0	0.0	-384,338	0.0	-384,338	0.0	-388,012	0.0
13	60.9 52.5	-20,096	0.0	0	0.0	0	0.0	0	0.0	0	0.0
14	62.8 53.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
15	64.0 53.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
16	64.4 53.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
17	64.1 53.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
18	63.2 53.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
19	61.8 54.2	0	0.0	0	0.0	-474,221	0.0	-474,221	0.0	0	0.0
20	60.0 53.6	0	0.0	-58,062	0.0	-901,728	0.0	-901,728	0.0	-86,890	0.0
21	57.9 52.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
22	55.6 51.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23	53.2 49.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
24	50.8 47.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

December		----- Design -----		----- Weekday -----		----- Saturday-----		----- Sunday -----		----- Monday -----	
Hour	OADB OAWB	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton	Htg Btuh	Clg Ton
1	37.5 35.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2	37.1 35.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3	37.4 35.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4	38.1 36.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	39.3 37.6	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
6	40.9 39.2	-2,999,999	0.0	-3,000,001	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
7	42.7 41.2	-3,000,000	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
8	44.7 43.1	-3,000,000	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0	-2,999,999	0.0
9	46.8 45.3	-3,000,000	0.0	-3,000,000	0.0	-2,999,999	0.0	-2,999,999	0.0	-3,000,001	0.0
10	48.8 47.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
11	50.7 48.1	-2,096,926	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
12	52.2 48.8	-390,730	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0	-3,000,000	0.0
13	53.4 49.2	-393,308	0.0	-659,574	0.0	-2,803,254	0.0	-2,803,254	0.0	-1,267,444	0.0
14	54.1 49.2	-394,881	0.0	-384,877	0.0	-558,911	0.0	-558,911	0.0	-384,877	0.0
15	54.4 48.9	-391,496	0.0	-383,253	0.0	-697,244	0.0	-697,244	0.0	-383,253	0.0
16	54.0 48.2	-384,937	0.0	-583,874	0.0	-1,101,573	0.0	-1,101,573	0.0	-583,874	0.0
17	53.0 47.3	-272,044	0.0	-1,313,488	0.0	-1,586,892	0.0	-1,586,892	0.0	-1,313,488	0.0
18	51.4 46.3	-224,380	0.0	-1,860,370	0.0	-1,987,960	0.0	-1,987,960	0.0	-1,860,370	0.0
19	49.3 45.4	-334,305	0.0	-2,151,766	0.0	-2,151,766	0.0	-2,151,766	0.0	-2,151,766	0.0
20	47.0 43.5	-1,633,814	0.0	-2,401,953	0.0	-2,401,953	0.0	-2,401,953	0.0	-2,401,953	0.0
21	44.5 41.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
22	42.2 39.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23	40.1 37.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
24	38.5 36.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

BUILDING TEMPERATURE PROFILES - ALTERNATIVE 1
 BASELINE

----- BUILDING TEMPERATURE PROFILES -----

Temperature	----- Room Number -----	
Range	1	2
(F)		

Max. Temp.	85.8	103.2
Mo./Hr.	7 19	6 18
Day Type	1	1

..... Number of Hours

Above 100	0	0
95 - 100	0	0
90 - 95	0	336
85 - 90	0	679
80 - 85	1,610	1,053
75 - 80	1,193	1,124
70 - 75	903	939
65 - 70	1,360	2,056
60 - 65	2,100	1,034
55 - 60	1,267	850
50 - 55	327	585
Low 50	0	104

Min. Temp.	53.0	48.2
Mo./Hr.	2 6	1 4
Day Type	5	3

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
 G207 - BASELINE

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	53,781	165	16,144	38
Feb	48,608	165	14,588	38
March	55,757	165	8,987	38
April	50,125	165	2,617	38
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	50,569	165	7,255	38
Dec	52,793	165	13,585	38
Total	462,663	165	63,177	38

Building Energy Consumption = 26,446 (Btu/Sq Ft/Year)
 Source Energy Consumption = 38,138 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- BASELINE

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref Num	Equip Code	----- Monthly Consumption -----												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	26585	24012	26585	25727	0	0	0	0	0	0	25727	26585	155,220
	PK	53.6	53.6	53.6	53.6	0.0	0.0	0.0	0.0	0.0	0.0	53.6	53.6	53.6
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	16144	14588	8987	2617	0	0	0	0	0	0	7255	13585	63,177
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	740	668	740	237	0	0	0	0	0	0	370	740	3,494
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1488	477	0	0	0	0	0	0	744	1488	7,029
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- BASELINE

ELEC	248	224	248	80	0	0	0	0	0	0	124	248	1,172
PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - BASELINE

----- UTILITY PEAK CHECKSUMS -----

Utility ELECTRIC DEMAND

Peak Value 165.4 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.02
---	--------	-------------------------	-----	------

Sub Total	5.0	3.02
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND	53.6	32.41
---	------------------------------------	------	-------

Sub Total	53.6	32.41
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	64.58
Base Utilities	0.0	0.00
Misc Equipment	0.0	0.00
Sub Total	106.8	64.58

Grand Total	165.4	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
 - BASELINE

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
 Gross Conditioned Floor Area (sqft)..... 298,599
 ACM Multiplier 1.025

ENERGY USE SUMMARY

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,200.5	6,317,652.5	80.4	6,734,134.0	23.1
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	155,220.0	0.0	6.7	1,589,456.1	5.5
Circulation Pumps	3,494.4	0.0	0.2	35,782.3	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	158,714.3	0.0	6.9	1,625,238.5	5.6
Lighting	295,748.6	0.0	12.8	3,028,472.3	10.1
Receptacle	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	462,663.4	6,317,652.5	100.0	11,387,845.0	38.8

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - WALL INSULATION

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	53,281	164	15,930	38
Feb	48,156	164	14,392	38
March	55,257	164	8,951	38
April	49,641	164	2,617	38
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	50,085	164	7,172	38
Dec	52,293	164	13,353	38
Total	459,743	164	62,416	38

Building Energy Consumption = 26,158 (Btu/Sq Ft/Year)
Source Energy Consumption = 37,769 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - WALL INSULATION

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTW20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	26085	23560	26085	25243	0	0	0	0	0	0	25243	26085	152,300
	PK	52.6	52.6	52.6	52.6	0.0	0.0	0.0	0.0	0.0	0.0	52.6	52.6	52.6
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	15930	14392	8951	2617	0	0	0	0	0	0	7172	13353	62,416
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	740	668	740	237	0	0	0	0	0	0	370	740	3,494
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1488	477	0	0	0	0	0	0	744	1488	7,029
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

V 600
PAGE

[illegible]

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600
PAGE 4

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - WALL INSULATION

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 164.4 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.04
---	--------	-------------------------	-----	------

Sub Total	5.0	3.04
-----------	-----	------

Air Moving Equipment

1		SUMMATION OF FAN ELECTRICAL DEMAND	52.6	31.99
---	--	------------------------------------	------	-------

Sub Total	52.6	31.99
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	64.97
--------	-------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	106.8	64.97
-----------	-------	-------

Grand Total	164.4	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
G207 - WALL INSULATION

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,200.5	6,241,558.5	80.3	6,654,035.0	22.8
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	152,300.0	0.0	6.7	1,559,555.4	5.4
Circulation Pumps	3,494.4	0.0	0.2	35,782.3	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	155,794.3	0.0	6.8	1,595,337.8	5.5
Lighting	295,748.6	0.0	12.9	3,028,472.3	10.1
Receptacle	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	459,743.4	6,241,558.5	100.0	11,277,845.0	38.5

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - ROOF INSULATION

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	35,407	128	6,496	38
Feb	32,013	128	6,603	38
March	36,610	128	2,643	38
April	31,705	128	49	16
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	32,499	128	1,419	38
Dec	34,320	128	4,875	38
Total	353,584	128	22,084	38

Building Energy Consumption = 11,437 (Btu/Sq Ft/Year)
Source Energy Consumption = 19,911 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - ROOF INSULATION

----- E Q U I P M E N T E N E R G Y C O N S U M P T I O N -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTW20	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
	ELEC	8211	7417	8211	7946	0	0	0	0	0	0	7946	8211	47,943
	PK	16.6	16.6	16.6	16.6	0.0	0.0	0.0	0.0	0.0	0.0	16.6	16.6	16.6
1	EQ4003													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
	GAS	6496	6603	2643	49	0	0	0	0	0	0	1419	4875	22,084
	PK	37.5	37.5	37.5	15.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
	ELEC	740	668	509	46	0	0	0	0	0	0	283	710	2,956
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
	ELEC	1488	1344	1023	93	0	0	0	0	0	0	570	1428	5,946
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

V 600
PAGE 3

[illegible]

Trane Air Conditioning Economics
By: Trane Customer Direct Service Network

V 600
PAGE

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - ROOF INSULATION

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 128.4 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.89
---	--------	-------------------------	-----	------

Sub Total	5.0	3.89
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND		16.6	12.90
---	------------------------------------	--	------	-------

Sub Total	16.6	12.90
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	83.21
--------	-------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	106.8	83.21
-----------	-------	-------

Grand Total	128.4	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
G207 - ROOF INSULATION

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

----- E N E R G Y U S E S U M M A R Y -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	6,937.0	2,208,441.5	65.4	2,395,710.2	8.2
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	47,942.7	0.0	4.8	490,934.5	1.7
Circulation Pumps	2,956.0	0.0	0.3	30,269.1	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	50,898.7	0.0	5.1	521,203.6	1.8
Lighting	295,748.6	0.0	29.6	3,028,472.3	10.1
Receptacle	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	353,584.3	2,208,441.5	100.0	5,945,386.5	20.2

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - INSULATED GLASS

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	53,667	165	16,093	38
Feb	48,505	165	14,541	38
March	55,643	165	8,912	38
April	50,015	165	2,605	38
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	50,459	165	7,198	38
Dec	52,679	165	13,527	38
Total	461,999	165	62,875	38

Building Energy Consumption = 26,337 (Btu/Sq Ft/Year)
Source Energy Consumption = 38,009 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- INSULATED GLASS

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref Num	Equip Code	----- Monthly Consumption -----												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	26471	23909	26471	25617	0	0	0	0	0	0	25617	26471	154,556
	PK	53.4	53.4	53.4	53.4	0.0	0.0	0.0	0.0	0.0	0.0	53.4	53.4	53.4
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	16093	14541	8912	2605	0	0	0	0	0	0	7198	13527	62,875
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	740	668	740	237	0	0	0	0	0	0	370	740	3,494
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1488	477	0	0	0	0	0	0	744	1488	7,029
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

V 600
PAGE 3

INSULATED GLASS

[illegible]

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - INSULATED GLASS

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 165.2 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.02
---	--------	-------------------------	-----	------

Sub Total	5.0	3.02
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND	53.4	32.31
---	------------------------------------	------	-------

Sub Total	53.4	32.31
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	64.67
--------	-------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	106.8	64.67
-----------	-------	-------

Grand Total	165.2	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
- INSULATED GLASS

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

----- ENERGY USE SUMMARY -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,200.5	6,287,502.0	80.3	6,702,396.5	23.0
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	154,555.8	0.0	6.7	1,582,654.9	5.4
Circulation Pumps	3,494.4	0.0	0.2	35,782.3	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	158,050.1	0.0	6.9	1,618,437.1	5.6
Lighting	295,748.6	0.0	12.8	3,028,472.3	10.1
Refrigeration	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	461,999.2	6,287,502.0	100.0	11,349,306.0	38.7

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - WEATHERSTRIP AND CAULK

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	53,750	165	16,131	38
Feb	48,581	165	14,575	38
March	55,726	165	8,969	38
April	50,095	165	2,614	38
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	50,540	165	7,246	38
Dec	52,762	165	13,569	38
Total	462,485	165	63,104	38

Building Energy Consumption = 26,420 (Btu/Sq Ft/Year)
Source Energy Consumption = 38,106 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- WEATHERSTRIP AND CAULK

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	26554	23984	26554	25697	0	0	0	0	0	0	25697	26554	155,041
	PK	53.5	53.5	53.5	53.5	0.0	0.0	0.0	0.0	0.0	0.0	53.5	53.5	53.5
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	16131	14575	8969	2614	0	0	0	0	0	0	7246	13569	63,104
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	740	668	740	237	0	0	0	0	0	0	370	740	3,494
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1488	477	0	0	0	0	0	0	744	1488	7,029
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

V 600
PAGE 3

[illegible]

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - WEATHERSTRIP AND CAULK

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 165.3 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.02
---	--------	-------------------------	-----	------

Sub Total	5.0	3.02
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND	53.5	32.38
---	------------------------------------	------	-------

Sub Total	53.5	32.38
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	64.60
--------	-------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	106.8	64.60
-----------	-------	-------

Grand Total	165.3	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
 - WEATHERSTRIP AND CAULK

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
 Gross Conditioned Floor Area (sqft)..... 298,599
 ACM Multiplier 1.025

----- ENERGY USE SUMMARY -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,200.5	6,310,442.0	80.3	6,726,544.0	23.1
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	155,041.5	0.0	6.7	1,587,628.2	5.4
Circulation Pumps	3,494.4	0.0	0.2	35,782.3	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	158,535.8	0.0	6.9	1,623,410.6	5.6
Lighting	295,748.6	0.0	12.8	3,028,472.3	10.1
Refrigeration	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	462,484.9	6,310,442.0	100.0	11,378,427.0	38.8

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - DESTRATIFICATION FANS

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	53,781	165	15,169	38
Feb	48,608	165	13,708	38
March	55,757	165	8,329	38
April	49,965	165	1,826	38
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	50,420	165	6,496	38
Dec	52,793	165	12,541	38
Total	462,354	165	58,068	38

Building Energy Consumption = 24,732 (Btu/Sq Ft/Year)
Source Energy Consumption = 36,326 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- DESTRATIFICATION FANS

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref	Equip	Monthly Consumption												Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	26585	24012	26585	25727	0	0	0	0	0	0	25727	26585	155,220
	PK	53.6	53.6	53.6	53.6	0.0	0.0	0.0	0.0	0.0	0.0	53.6	53.6	53.6
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	15169	13708	8329	1826	0	0	0	0	0	0	6496	12541	58,068
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	740	668	740	189	0	0	0	0	0	0	325	740	3,402
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1488	381	0	0	0	0	0	0	654	1488	6,843
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- DESTRATIFICATION FANS

ELEC	248	224	248	63	0	0	0	0	0	0	109	248	1,140
PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - DESTRATIFICATION FANS

----- UTILITY PEAK CHECKSUMS -----

Utility ELECTRIC DEMAND

Peak Value 165.4 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.02
---	--------	-------------------------	-----	------

Sub Total	5.0	3.02
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND		53.6	32.41
---	------------------------------------	--	------	-------

Sub Total	53.6	32.41
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	64.58
--------	-------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	106.8	64.58
-----------	-------	-------

Grand Total	165.4	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
- DESTRATIFICATION FANS

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

ENERGY USE SUMMARY

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	7,983.5	5,806,826.5	79.0	6,194,200.5	21.3
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	155,220.0	0.0	7.2	1,589,456.1	5.5
Circulation Pumps	3,401.9	0.0	0.2	34,835.5	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	158,621.9	0.0	7.3	1,624,291.6	5.6
Lighting	295,748.6	0.0	13.7	3,028,472.3	10.1
Receptacle	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	462,353.9	5,806,826.5	100.0	10,846,964.0	37.0

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1

G207 - LOADING DOCK SEALS

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC On Peak (kWh)	DEMAND On Peak (kW)	GAS On Peak (Therm)	GAS DMND On Peak (Thrm/hr)
Jan	52,297	162	15,406	38
Feb	47,268	162	13,930	38
March	54,233	162	8,365	38
April	48,644	157	2,571	38
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	49,053	162	6,761	38
Dec	51,309	162	12,780	38
Total	453,835	162	59,813	38

Building Energy Consumption = 25,219 (Btu/Sq Ft/Year)
Source Energy Consumption = 36,649 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
LOADING DOCK SEALS

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	25101	22672	25101	24291	0	0	0	0	0	0	24291	25101	146,557
	PK	50.6	50.6	50.6	50.6	0.0	0.0	0.0	0.0	0.0	0.0	50.6	50.6	50.6
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	15406	13930	8365	2571	0	0	0	0	0	0	6761	12780	59,813
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	740	668	728	224	0	0	0	0	0	0	346	740	3,445
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1464	450	0	0	0	0	0	0	696	1488	6,930
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

1 EQ5307

BOILER CONTROLS

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- LOADING DOCK SEALS

ELEC	248	224	244	75	0	0	0	0	0	0	116	248	1,155
PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - LOADING DOCK SEALS

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 162.4 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.07
---	--------	-------------------------	-----	------

Sub Total	5.0	3.07
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND		50.6	31.16
---	------------------------------------	--	------	-------

Sub Total	50.6	31.16
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	65.77
--------	-------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	106.8	65.77
-----------	-------	-------

Grand Total	162.4	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
LOADING DOCK SEALS

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

ENERGY USE SUMMARY

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,085.0	5,981,312.5	79.8	6,378,909.0	21.9
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	146,556.5	0.0	6.6	1,500,742.1	5.2
Circulation Pumps	3,445.1	0.0	0.2	35,278.3	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	150,001.7	0.0	6.8	1,536,020.5	5.3
Lighting	295,748.6	0.0	13.4	3,028,472.3	10.1
Refrigeration	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	453,835.2	5,981,312.5	100.0	10,943,402.0	37.3

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - REDUCED LIGHTS

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	41,477	114	16,590	38
Feb	37,480	114	14,990	38
March	42,544	114	9,260	38
April	38,339	114	2,801	38
May	13,883	58	0	0
June	13,813	58	0	0
July	12,816	58	0	0
Aug	14,416	58	0	0
Sept	12,746	58	0	0
Oct	13,883	58	0	0
Nov	38,888	114	7,627	38
Dec	40,943	114	14,058	38
Total	321,228	114	65,325	38

Building Energy Consumption = 25,549 (Btu/Sq Ft/Year)
Source Energy Consumption = 34,045 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- REDUCED LIGHTS

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref	Equip	Monthly Consumption												Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	13349	12074	14416	12746	13883	13813	12816	14416	12746	13883	12746	12816	159,705
	PK	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	25652	23169	25652	24824	0	0	0	0	0	0	24824	25652	149,773
	PK	51.7	51.7	51.7	51.7	0.0	0.0	0.0	0.0	0.0	0.0	51.7	51.7	51.7
1	EQ4003	FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001	GAS FIRE TUBE HOT WATER												
	GAS	16590	14990	9260	2801	0	0	0	0	0	0	7627	14058	65,325
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020	HEAT WATER CIRC. PUMP C.V.												
	ELEC	740	668	740	230	0	0	0	0	0	0	394	740	3,511
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240	BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1488	462	0	0	0	0	0	0	792	1488	7,062
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- REDUCED LIGHTS

ELEC	248	224	248	77	0	0	0	0	0	0	132	248	1,177
PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - REDUCED LIGHTS

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 114.4 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	4.36
---	--------	-------------------------	-----	------

Sub Total	5.0	4.36
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND		51.7	45.21
---	------------------------------------	--	------	-------

Sub Total	51.7	45.21
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	57.7	50.42
--------	------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	57.7	50.42
-----------	------	-------

Grand Total	114.4	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
- REDUCED LIGHTS

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

ENERGY USE SUMMARY

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	8,239.0	6,532,541.5	86.0	6,960,727.0	23.9
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	149,773.1	0.0	6.7	1,533,680.0	5.3
Circulation Pumps	3,510.8	0.0	0.2	35,950.3	0.1
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	153,283.9	0.0	6.9	1,569,630.4	5.4
Lighting	159,704.8	0.0	7.1	1,635,380.9	5.5
Refrigeration	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	321,227.7	6,532,541.5	100.0	10,165,738.0	34.8

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - CONTINUOUS BOILER OPERATION

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	68,311	165	22,920	38
Feb	61,732	165	20,717	38
March	69,553	165	13,004	38
April	63,198	165	2,638	23
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	64,541	165	10,332	38
Dec	67,308	165	19,450	38
Total	545,674	165	89,060	38

Building Energy Consumption = 36,063 (Btu/Sq Ft/Year)
Source Energy Consumption = 50,109 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
 - CONTINUOUS BOILER OPERATION

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref Num	Equip Code	Monthly Consumption												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	39877	36018	39877	38591	0	0	0	0	0	0	38591	39877	232,830
	PK	53.6	53.6	53.6	53.6	0.0	0.0	0.0	0.0	0.0	0.0	53.6	53.6	53.6
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	22920	20717	13004	2638	0	0	0	0	0	0	10332	19450	89,060
	PK	37.5	37.5	37.5	23.3	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	1110	1002	890	300	0	0	0	0	0	0	701	1105	5,108
	PK	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	2232	2016	1791	603	0	0	0	0	0	0	1410	2223	10,275
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

V 600
PAGE 3

[illegible]

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - CONTINUOUS BOILER OPERATION

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 165.4 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	5.0	3.02
---	--------	-------------------------	-----	------

Sub Total	5.0	3.02
-----------	-----	------

Air Moving Equipment

1	SUMMATION OF FAN ELECTRICAL DEMAND		53.6	32.41
---	------------------------------------	--	------	-------

Sub Total	53.6	32.41
-----------	------	-------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	64.58
Base Utilities	0.0	0.00
Misc Equipment	0.0	0.00
Sub Total	106.8	64.58

Grand Total	165.4	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1
CONTINUOUS BOILER OPERATION

----- CALIFORNIA TITLE 24 COMPLIANCE REPORT -----

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

----- ENERGY USE SUMMARY -----

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	11,987.5	8,905,955.0	83.1	9,497,442.0	32.6
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	232,829.7	0.0	7.4	2,384,181.7	8.2
Circulation Pumps	5,108.1	0.0	0.2	52,306.7	0.2
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	237,937.8	0.0	7.5	2,436,488.3	8.4
Lighting	295,748.6	0.0	9.4	3,028,472.3	10.1
Refrigeration	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	545,673.8	8,905,955.0	100.0	14,962,402.0	51.1

MONTHLY ENERGY CONSUMPTION - ALTERNATIVE 1
G207 - RADIANT HEATERS

----- MONTHLY ENERGY CONSUMPTION -----

Month	ELEC	DEMAND	GAS	GAS DMND
	On Peak (kWh)	On Peak (kW)	On Peak (Therm)	On Peak (Thrm/hr)
Jan	26,456	110	15,662	38
Feb	23,928	110	14,157	38
March	28,282	110	8,427	38
April	24,059	110	2,155	38
May	25,708	107	0	0
June	25,580	107	0	0
July	23,733	107	0	0
Aug	26,696	107	0	0
Sept	23,604	107	0	0
Oct	25,708	107	0	0
Nov	24,318	110	6,641	38
Dec	25,469	110	13,066	38
Total	303,543	110	60,108	38

Building Energy Consumption = 23,599 (Btu/Sq Ft/Year)
Source Energy Consumption = 31,599 (Btu/Sq Ft/Year)

Floor Area = 298,599 (Sq Ft)

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- RADIANT HEATERS

----- EQUIPMENT ENERGY CONSUMPTION -----

Ref	Equip	Monthly Consumption												Total
Num	Code	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
0	LIGHTS													
	ELEC	24720	22360	26696	23604	25708	25580	23733	26696	23604	25708	23604	23733	295,749
	PK	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
1	MISC LD													
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	MISC LD													
	GAS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	MISC LD													
	OIL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MISC LD													
	P STEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	MISC LD													
	P HOTH2O	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	MISC LD													
	P CHILL	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ4003													
		FC CENTRIF. FAN C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ2001													
		GAS FIRE TUBE HOT WATER												
	GAS	15662	14157	8427	2155	0	0	0	0	0	0	6641	13066	60,108
	PK	37.5	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	0.0	37.5	37.5	37.5
1	EQ5020													
		HEAT WATER CIRC. PUMP C.V.												
	ELEC	0	0	0	0	0	0	0	0	0	0	0	0	0
	PK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	EQ5240													
		BOILER FORCED DRAFT FAN												
	ELEC	1488	1344	1359	390	0	0	0	0	0	0	612	1488	6,681
	PK	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

EQUIPMENT ENERGY CONSUMPTION - ALTERNATIVE 1
- RADIANT HEATERS

ELEC	248	224	226	65	0	0	0	0	0	0	102	248	1,113
PK	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5

UTILITY PEAK CHECKSUMS - ALTERNATIVE 1
G207 - RADIANT HEATERS

----- U T I L I T Y P E A K C H E C K S U M S -----

Utility ELECTRIC DEMAND

Peak Value 110.3 (kW)
Yearly Time of Peak 9 (hr) 1 (mo)

Hour 9 Month 1

Sub Total	0.0	0.00
-----------	-----	------

Heating Equipment

1	EQ2001	GAS FIRE TUBE HOT WATER	3.5	3.17
---	--------	-------------------------	-----	------

Sub Total	3.5	3.17
-----------	-----	------

Sub Total	0.0	0.00
-----------	-----	------

Sub Total	0.0	0.00
-----------	-----	------

Miscellaneous

Lights	106.8	96.83
--------	-------	-------

Base Utilities	0.0	0.00
----------------	-----	------

Misc Equipment	0.0	0.00
----------------	-----	------

Sub Total	106.8	96.83
-----------	-------	-------

Grand Total	110.3	100.00
-------------	-------	--------

CALIFORNIA TITLE 24 COMPLIANCE - ALTERNATIVE 1

7 - RADIANT HEATERS

CALIFORNIA TITLE 24 COMPLIANCE REPORT

Weather Name ATLANTA.
Gross Conditioned Floor Area (sqft)..... 298,599
ACM Multiplier 1.025

ENERGY USE SUMMARY

	ELEC (kWh/yr)	GAS (kBtu/yr)	PERCENT OF TOTAL ENERGY (%)	TOTAL SOURCE ENERGY (kBtu/yr)	ADJUSTED UNIT SOURCE ENERGY (kBtu/yr-sf)
Primary Heating	7,794.5	6,010,785.0	85.7	6,406,958.0	22.0
Primary Cooling					
Compressor	0.0	0.0	0.0	0.0	0.0
Tower/Cond Fans	0.0	0.0	0.0	0.0	0.0
Condenser Pump	0.0	0.0	0.0	0.0	0.0
Other Accessories	0.0	0.0	0.0	0.0	0.0
Auxiliary					
Supply Fans	0.0	0.0	0.0	0.0	0.0
Circulation Pumps	0.0	0.0	0.0	0.0	0.0
Base Utilities	0.0	0.0	0.0	0.0	0.0
Subtotal	0.0	0.0	0.0	0.0	0.0
Lighting	295,748.6	0.0	14.3	3,028,472.3	10.1
Refrigeration	0.0	0.0	0.0	0.0	0.0
Domestic Hot Water	0.0	0.0	0.0	0.0	0.0
Cogeneration	0.0	0.0	0.0	0.0	0.0
Totals	303,543.1	6,010,785.0	100.0	9,435,430.0	32.1

†

APPENDIX F
FIELD SURVEY DATA

C E R T I F I C A T E O F C A L I B R A T I O N

f o r

EMC ENGINEERS
1950 SPECTRUM CIRCLE
SUITE 312
MARIETTA, GA 30067

Cust PO# 62584
Omega WO# 202992981

Model# HH-23
Serial# T-54474

C A L - 3

OMEGA Process Controls Inc certifies that the above instrumentation has been calibrated to meet or exceed the published specifications. This calibration was performed using instrumentation and standards that are traceable to the United States National Institute of Standards and Technology, and is in compliance with MIL-STD-45662A.

Readings Observed in: Fahrenheit

STANDARD	AS RECEIVED	FINAL CAL
32	32.5	32.0
900	900.8	900.4
1800	1800.4	1800.0

TEST EQUIPMENT

Fluke 8860A Digit Multimeter, S/N 3335023
Analogic AN-3100 DC Standard, S/N 7904379
Gen Res RDS63-A Dec Resistor, S/N 591
Omega TRC-III Ice Point Cell, S/N 003


NIST(NBS)

245516
245516
241457
241457

TEST CONDITIONS

Temp: 23C Rel Hum: 26%

CERTIFIED BY
John L. Howard


Instrumentation Supervisor

BUILDING 101

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ.#

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

JW

CHECKED BY:

DATE:

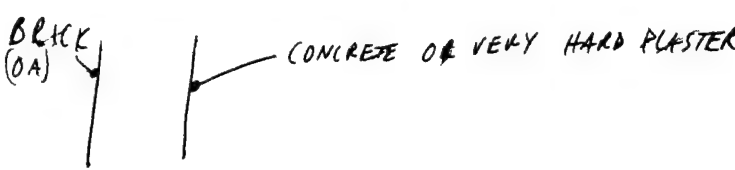
1/2/92

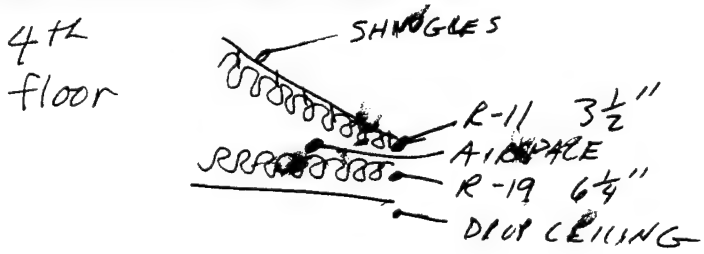
BLDG.#
ECO 1

101

WALL & ROOF INSULATION

AREAS IN SQ. FEET	NORTH	SOUTH	EAST	WEST
WALLS				
WINDOWS				
OVERHEAD DOORS				
PERSONNEL DOORS				

SKETCH WALL CROSS-SECTION	COMPONENTS
	<ol style="list-style-type: none">1. OUTSIDE AIR FILM2.3.4.5.6.7. INSIDE AIR FILM

SKETCH ROOF CROSS-SECTION	COMPONENTS
	<ol style="list-style-type: none">1. OUTSIDE AIR FILM2.3.4.5.6.7. INSIDE AIR FILM

PERSONNEL DOOR TYPE	BASEMENT []
OVERHEAD DOOR TYPE	SLAB []
	CRAWL SPACE []

COMMENTS: 2nd & 3rd floor have R-19 6 1/4" INSULATION
ABOVE DROP CEILING.

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

JOB
PROJ.#
SHEET NO.
CALCULATED
CHECKED BY
DATE

BLDG.# 6101
ECO 1

26/4

PIPE INSULATION

[illegible]

COMMENTS: BOILER STACKS WELL INSULATED. ALL PIPE INSULATION AVERAGES

VERY GOOD.

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/2/92

BLDG.# 101
ECO 3

WEATHERSTRIPING AND CAULKING

	DOOR/ WINDOW	CONDITION OF W.S./CAULK	INFILTRATION	ORIENTATION	DIMENSIONS (INCH)	#
①	D	NONE	HIGH HIGH	SOUTH	39x84	1
	W	SEALED PAINT	LOW	SOUTH	48x84	
②	D	NONE	VERY HIGH	SW	60x84	1
③	D	POOR	HIGH	MAIN EAST ENTRANCE	60x84	3
④	W	SEALED PAINT	MED	1 ST EAST INFO. ADMIN. DIV	48x84	
	D	NONE	MED	1 ST NW	60x84	1
	W					

COMMENTS:

① DOOR HAS $\frac{1}{2}$ " AIR GAP ON BOTTOM

~~WINDOW~~ WINDOW IN DEPUTY COMMANDER (C-112) HAS FAULTY LOCK ON EAST WALL CAUSING HIGH INFILTRATION. ② DOUBLE DOOR DOES NOT SHUT COMPLETELY LEAVING $\frac{1}{4}$ " - $\frac{1}{2}$ " AIR GAP IN MIDDLE AND TOP.

③ FRONT DOORS HAVE VESTIBULE BUT NEITHER OUTSIDE NOR INTERNAL DOORS ARE SEALED CAUSING HIGH INFILTRATION. ALL 3 INTERNAL DOORS HAVE $\frac{1}{2}$ " AIR GAP ON BOTTOM. ④ TWO WINDOWS IN THIS ROOM ARE SPRUNG OPEN AND HAVE BEEN TAPED SHUT. THIS IS THE CASE IN MANY OTHER ROOMS HOWEVER, NO ONE HAS TAPED THEM UP.

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/2/92

BLDG.# 101
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
WEST BASEMENT MECH. ROOM	150°F
1 st floor WEST MEN'S ROOM	141°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJECT NO. Ft. McPherson/Ft. Gillem Energy Study
SHEET NO. EMC # 3105.000
CALCULATED BY: CS
CHECKED BY:
DATE: 1-7-92

BLDG.# 101

MOTORS

MOTOR #	1	HP	2	PH	3	RPM	1735
MODEL #	PUL 145 PT DR 7026V	VOLTS	208/460	AMPS	6/3		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	Marathon Electric	REQUIRED HR.		TO			
FRAME	145P	EFF.					
DESCRIPTION	AHU 1	COMMENTS	4 th FLOOR				

MOTOR #	2	HP	7 1/2	PH	3	RPM	1745
MODEL #	6808959904	VOLTS	200	AMPS	24.4		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	WESTINGHOUSE	REQUIRED HR.		TO			
FRAME	213T	EFF.					
DESCRIPTION	AHU 2	COMMENTS					

MOTOR #	3	HP	5	PH	3	RPM	1730
MODEL #	3N6598	VOLTS	208/460	AMPS	15/7.3		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	GAYTON TRIVOLT	REQUIRED HR.		TO			
FRAME	K184T	EFF.	62.5%				
DESCRIPTION	AHU - 3	COMMENTS					

EMC ENGINEERS, INC.

DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CHECKED BY:

DATE:

BLDG.#

101

ECO 5

4th FLOOR

MOTORS

MOTOR #	HP	2	PH	3	RPM	1735
MODEL #	PVL145TTDR7026DC	VOLTS	208	AMPS	6	
SERIAL #		PRESENT HR.		TO		
MFG	MARATHON	REQUIRED HR.		TO		
FRAME	145 T	EFF.	82.5			
DESCRIPTION	AHU 1 (4 th FLOOR)					
COMMENTS						
MOTOR #	HP		PH		RPM	
MODEL #		VOLTS		AMPS		
SERIAL #		PRESENT HR.		TO		
MFG		REQUIRED HR.		TO		
FRAME		EFF.				
DESCRIPTION						
COMMENTS						
MOTOR #	HP	5	PH	3	RPM	1730
MODEL #	3N659	VOLTS	200	AMPS	15	
SERIAL #		PRESENT HR.		TO		
MFG	DAYTON	REQUIRED HR.		TO		
FRAME	K184T	EFF.				
DESCRIPTION	AHU-3 (4 th FLOOR)					
COMMENTS						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: CS
CHECKED BY:
DATE: 1-7-92

BLDG.# 101
ECO 5

MOTORS

MOTOR #	4-381260-03 ⁴	HP	1.0	PH	3	RPM	1745
MODEL #	8-331260-03	VOLTS	200-208	AMPS	3.8		
SERIAL #		PRESENT HR.		TO			
MFG	CENTURY	REQUIRED HR.		TO			
FRAME	L143 T	EFF.					
DESCRIPTION	AHU-4	COMMENTS	SUMMER TIME				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CHECKED BY:

DATE:

1/2/92

BLDG.#
ECO 5

101

MOTORS

MOTOR #	1	HP	1/4	PH	1	RPM	1725
MODEL #		VOLTS	115	AMPS	5		
SERIAL #	317P 216	PRESENT HR.	0	TO	2400		
MFG	WESTINGHOUSE FEDERAL PUMP CORP.	REQUIRED HR.		TO			
FRAME	SB56L	EFF.					
DESCRIPTION	DHW CIR.	COMMENTS	TEMP CONTROL SET @ 160°F				

MOTOR #	2	HP	10	PH	3	RPM	1745
MODEL #	JVK 215TTDR 7343D-FIW	VOLTS	208	AMPS	29		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	MARATHON	REQUIRED HR.		TO			
FRAME	215 JM	EFF.					
DESCRIPTION	CWP	COMMENTS					

MOTOR #	3	HP	10	PH	3	RPM	1745
MODEL #	JVK 215TTDR 7343D-FIW	VOLTS	208	AMPS	29		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	MARATHON	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	CWP	COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CHECKED BY:

DATE:

BLDG.#

101

ECO 5

MOTORS

MOTOR #	4	HP	30	PH	3	RPM	1765
MODEL #	FM 286TSTD R7361CBWF2	VOLTS	200	AMPS	85		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	MARATHON	REQUIRED HR.		TO			
FRAME	286TS	EFF.					
DESCRIPTION	HWP #1	COMMENTS	RUNNING.				

MOTOR #	5	HP	30	PH	3	RPM	17
MODEL #	FM 286TSTD R7361CBWF2	VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG	MARATHON	REQUIRED HR.		TO			
FRAME	286TS	EFF.					
DESCRIPTION	HWP #2	COMMENTS	NOT RUNNING.				

MOTOR #	6	HP	1/3	PH	1	RPM	1725
MODEL #	555JXDYD-2680	VOLTS	115	AMPS	6.2		
SERIAL #		PRESENT HR.		TO			
MFG	EMERSON	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	HWP #3	COMMENTS	NEW ADDITION NO MOTOR TO PUMP COUPLING				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

JW

CHECKED BY:

DATE:

1/2/92

BLDG.#
ECO 5

101

10+ HP MOTORS

MEASURED

MOTOR#	CHW # 1 (NORTH)	PHASE A	PHASE B	PHASE C
LOCATION		3.8		
MFG	MARATHON	9.7		
MODEL #	JVK215TTDR 73430-F1W	4.3		
SERIAL #		75.1		
FRAME	215JM			
HP	10	205	203	
RPM	1745	16	15.7	
PRESENT	TO			
REQ HR.	TO			
		PH 3 VLTs. 208 Amps 29		

MOTOR#	CHWP # 2 (SOUTH)	PHASE A	PHASE B	PHASE C
LOCATION		4.1		
MFG	MARATHON	5.9		
MODEL #	JVK215TTDR 73430-F1W	4.3		
SERIAL #		72.3		
FRAME		204	204	
HP	10	16.7	16.8	
RPM	1745			
PRESENT	TO			
REQ HR.	TO			
		VLTs 208 Amps 29 PH 3		
COMMENTS				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: _____
CHECKED BY: _____
DATE: _____

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
65B	6	4	34	F	ON	N	N	1	Y Y
65C	8	4	34	F	OFF	Y	N	0	N
65D	12	4	34	F	ON	Y	N	1	N
76	1	4	34	F	OFF	Y	N	1	N
86	3	2	34	F	ON	Y	Y	1	Y
88A	1	4	34	F	ON	Y	Y	1	Y
88B	1	2	34	F	ON	Y	N	1	Y
77	8	4	34	F	ON	Y	Y	1	Y
85	1	2	34	F	OFF	Y	Y	1	N
88	1	2	8' 4'	FF	ON	Y	Y	1	Y
87	1	2	UTUBE 34	FF	ON	Y	Y	1	Y
78	4	4	34	FF	OFF	Y	Y	2	N
79	2	4	34	FF	ON	N	Y	0	Y
80	5	4	34	F	ON	Y	Y	1	N
81	1	4	34	F	OFF	Y	Y	1	N
82	1	4	34	F	OFF	Y	Y	1	N
84	1	4	34	F	OFF	Y	Y	1	N
83	8	4	34	F	OFF	Y	Y	1	N

DELANE

OF EXIT SIGNS - _____

COMMENTS: _____

SW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
 PROJ.# EMC # 3105.000
 SHEET NO. _____ OF _____
 CALCULATED BY: CS
 CHECKED BY: _____
 DATE: 1-7-92

BLDG.# 101
EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS - 11

COMMENTS:

1/5

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: CS
CHECKED BY: _____
DATE: 1-7-92

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
336	3	4	34	F	ON	Y	N	1	Y
339	5	4	34	F	ON	Y	N	1	N
341	2	4	34	F	ON	Y	N	w/ 1/2 340 4	Y
343	2	4	34	F	ON	Y	N	1	N
342	4	4	34	F	ON	Y	Y	1	N
345	3	4	34	F	ON	N	Y	0	Y
<hr/>									
201	64	4	34	F	ON	Y	N	12	N
204	3	4	34	F	ON	Y	N	1	N
207	3	4	34	F	ON	Y	N	1	N
209	3	4	34	F	ON	Y	N	1	N
210	2	2	34	F	ON	Y	N	1	Y
211	2	4	34	F	ON	Y	N	1	Y
212	1	4	34	F	ON	N	N	0	Y
213	11	4	34	F	ON	Y	N	3	Y
214	14	4	34	F	ON	Y	N	3	N
215	2	4	34	F	ON	N	N	0	Y
216	4	4	34	F	OFF	Y	Y	1	N

OF EXIT SIGNS - NI

COMMENTS: _____

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. OF
CALCULATED BY: CS
CHECKED BY:
DATE: 1-7-92

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
	4	2 ⁽⁴⁾	40	F	ON	Y	N	WORK W/ OTHERS	N
433	2	1	60	I	OFF	Y	N	1	N
301	1	4	34	F	OFF	Y	N	1	N
303	1	4	34	F	ON	Y	Y	1	Y
305	2	4	34	F	OFF	Y	Y	1	N
309	16	4	34	F	ON	Y	N	2	N
311	1	4	34	F	ON	Y	N ^N	1	Y
312	3	4	34	F	ON	Y	N	1	N
316	6	4	34	F	ON	Y	Y	1	Y
317	5	4	34	F	ON	Y	N	1	N
320 320	1	2	34	F	ON	Y	Y	1	Y
322	1	4	34	F	OFF	Y	N	1	N
324	1	2 ^{8'}		F	OFF	N	N	—	N
328	1	2 ^{8'}		F	OFF	N	N	^{pull = 10} out	N
330	68	4	34	F	ON	Y	N	17	N
332	2	4	34	F	ON	Y	Y	1	Y
334	1	2	34	F	OFF	Y	N	1	N

OF EXIT SIGNS - NI IIII

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: CS
CHECKED BY: _____
DATE: 1-7-92

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
401	25	4	34	F	ON	Y	N	6	N
	1	2 ^(u)	40	F	ON	Y	N	1	N
403	2	4	34	F	ON	Y	N	1	Y
405	3	4	34	F	OFF	Y	Y	1	N
407	1	1	75	I	OFF	Y	N	1	N
409	7	4	34	F	ON	Y	N	1	N
411	5	2 ^(u)	40	F	ON	Y	N	2	Y N
413	2	4	34	F	ON	Y	N	1	Y
414	4	4	34	F	OFF	Y	N Y	1	N
415									
416	3	4	34	F	OFF	Y	Y	1	N
417									
419	2	1	60	I	OFF	Y	N	1	N
422	3	4	34	F	ON	Y	N	1	Y
423	2	2 ^{8'}		F	OFF	COULD NOT FIND	N Y		N
425	1	2 ^{6'}		F	OFF	Y	N	1	N
427	2	4	34	F	ON	Y	Y	1	Y
429	47	4	34	F	ON	Y	N	12	N

OF EXIT SIGNS - 111

COMMENTS:

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB _____ Ft. McPherson/Ft. Gillem Energy Study
PROJ.# _____ EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: _____ J W _____
CHECKED BY: _____
DATE: _____ 1/7/92 _____

BLDG.# 101
EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS -

COMMENTS: _____

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ.# EMC # 3105.000

SHEET NO. OF

CALCULATED BY: JW

CHECKED BY:

DATE: 1/7/92

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
233	2	4	34	F	OFF	Y	Y	1	N
234	9	4	34	F	ON	Y	N	2	N
235	3	4	34	F	ON	Y	N	1	N
237	16	4		F	ON	Y	N	2	N
238	4	4	34	F	ON	Y	N	1	Y
239	5	4		F	ON	Y	N	2	Y
240	1	4		F	ON	Y	N	1	Y
241	1	2U		F	OFF	Y	N	1	N
242	1	4		F	ON	Y	N	1	Y
243	2	4		F	ON	Y	N	1	Y
244	1	2U		F	ON	Y	N	1	Y
245	1	1	60	I	OFF	Y	N	1	N
246	3	4		F	ON	Y	N	1	N
247	3	4		F	ON	Y	N	1	N
248	4	4		F	ON	Y	N	1	Y
249	3	4		F	ON	Y	N	1	N
250	8	4		F	ON	Y	N	2	N
251	5	4	34	F	ON	Y	N	1	N

OF EXIT SIGNS -

COMMENTS:

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ # EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/7/92

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
333	9	4	34	F	ON	Y	N	3	N
335	2	2	34	F	ON	Y	N	1	Y
337	5	4	34	F	ON	Y	N	1	N
338	2	4		F	ON	Y	Y	1	N
340	3	4		F	ON	Y	ON	$\frac{1}{2}$ w/ 2 341	Y
344	2	4		F	ON	N	N	0	Y
200	5	4		F	ON	Y	N	1	N
202	3	4		F	ON	Y	Y	1	Y
203	3	4		F	ON	Y	Y	1	Y
205	3	4		F	ON	Y	Y	1	Y
delamp 206	5	4		F	ON	Y	Y	1	N
	15	4		F	ON	Y	N	4	N
217	2	4		F	OFF	Y	Y	1	N
2219	63	4	34	F	ON	Y	N	8	N
221	1	1	60	I	OFF	Y	N	1	N
224	4	4	34	F	ON	Y	N	1	N
226	8	4	34	F	ON	Y	N	2	N
2310	7	4	34	F	ON	Y	N	2	N

OF EXIT SIGNS - 11

COMMENTS: _____

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. OF
CALCULATED BY: JW
CHECKED BY:
DATE: 1/7/92

BLDG.# 101
EC0 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
300	5	4	34	F	ON	Y	N	2	N
302	6	4		F	ON	Y	N	1	N
304	2	2	34	F	ON	Y	Y	1	Y
306	9	4	34	F	ON	Y	N	2	N
307	2	4	34	F	ON	Y	Y	1	Y
308	98	4	34	F	ON	Y	N	8	N
310	2	4		F	ON	Y	Y	1	N
3104	10	4		F	ON	Y	N	2	N
313	6	4	34	F	ON	Y	Y	1	Y
318	2	4	34	F	ON	Y	Y	1	Y
319	OCCUPIED								
321	320 1	4		F	ON	Y	N	1	Y
323	85	4	34	F	ON	Y	N	10	N
325	3	4		F	OFF	Y	Y	1	N
326	2	4		F	ON	Y	Y	1	Y
327	2	4		F	ON	Y	Y	1	Y
329	2	4		F	ON	Y	Y	1	N
331	4	4		F	ON	Y	Y	1	N

OF EXIT SIGNS -

COMMENTS:

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ.# EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: JW

CHECKED BY: _____

DATE: 1/7/92

BLDG.# 101
EC0 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
400	6	2	8'	F	ON	Y	N	2	N
400	2	4	34	F	ON	Y	N	1	N
402	10	4		F	ON	Y	N	2	N
406	2	4		F	OFF	Y	Y	1	N
404	2	4		F	ON	Y	Y	1	N
408	$\frac{2}{1}$	$\frac{2}{2}$	$\frac{8'}{34}$	F	OFF	Y	N	1	N
410	8	4		F	ON	Y	N	1	N
412	4 48	4		F	ON	Y	N	5	N
418	LOCKED								
420	4	4		F	ON	Y	Y	1	Y
421	3	2	34	F	ON	Y	N	1	Y
424	1	1	200	I	OFF	N ^{SCREW} IN	Y	0	N
426	5	4		F	ON	Y	N	1	N
428	$\frac{2}{3}$	$\frac{4}{2-4}$	$\frac{34}{}$	F	OFF	Y	Y	1	N
430	4	4		F	ON	Y	Y	1	N
431	3	2	34	F	ON	Y	N	1	N
432	3	2	34	F	ON	Y	N	1	N

OF EXIT SIGNS - 1111

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ. # EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: JW

CHECKED BY: _____

DATE: 1/3/92

BLDG.# 101
EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS -

COMMENTS:

2w

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/3/92

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
75	8	4	34	F	ON	Y	NO	1	NO
74	8	4	34	F	ON	Y	NO	1	NO
74-A	1	4	34	F	OFF	Y	YES	1	NO
73-A	1	4	34	F	OFF	Y	YES	1	NO
73	10	4	34	F	ON	Y	NO	1	NO
72	4	4	34	F	OFF	Y	NO	1	NO
71	12	4	34	F	ON	Y	NO	1	NO
HALL-1	8	4	34	F	ON	Y	NO	2	NO
67	2	2	8'	F	OFF	Y	NO	1	NO
70	2	4	34	F	ON	Y	NO	1	NO
69	3	4	34	F	ON	Y	YES	1	NO
61	6	4	34	F	ON	Y	NO	2	NO
68	1	2	8'	F	ON	Y	NO	1	NO
59	1	1	150	I	OFF	Y	NO	1	NO
59	2	2	34	F	OFF	Y	NO	1	NO
60	2	4	34	F	OFF	Y	NO	1	NO
271	20	4	34	F	ON	Y	NO	2	NO
58	6	4	34	F	ON	Y	NO	1	NO

OF EXIT SIGNS - _____

COMMENTS: _____

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ. # EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/3/92

BLDG. # 101
EC0 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
57A	1	4	20	F	OFF	Y	NO	1	NO
57	1	2	34	F	OFF	Y	NO	1	NO
56	2	4	34	F	OFF	Y	NO	1	NO
54	3	4	34	F	ON	Y	NO	1	NO
55	3	4	34	F	OFF	Y	YES	1	NO
53	4	4	20	F	ON	Y	YES	1	NO
53A	SAME	↑↑							
53B	3	4	34	F	ON	Y	YES	1	YES
51	2	4	34	F	ON	Y	YES	1	YES
52	1	4	34	F	ON	NO	YES	0	NO
50	3	4	34	F	ON	NO	YES	0	YES
49	3	4	34	F	ON	YES	NO	1	YES
48	12	4	34	F	ON	YES	NO	2	YES
47	6	4	34	F	OFF	Y	Y	1	NO
45	2	2	8' 34	F	OFF	Y	YES	1	NO
44	4	4	34	F	ON	Y	YES	1	NO
43	1	1	150	I	ON	Y	NO	1	YES
34	4	4	34	F	ON	Y	YES	1	NO

OF EXIT SIGNS - _____

COMMENTS: _____

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: _____
CHECKED BY: _____
DATE: _____

BLDG.# 101
EC0 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
71	12	4	34	F	0	Y	N	1	N
68	1	2	8' TUBE	F	0	Y	Y	1	Y
61	8	24	34	F	0	Y	Y N	2	N
50	2	4	34	F	OFF	Y	Y	1	N
59 60	1	1	150	INC	0	Y	Y	1	N
59 60	2	2	34	F	0	Y	Y	1	N
21	20	1	34	F	0	Y	N	1	N
21	10	1	34	F	OFF	Y	N	1	N
40	2	1	34	F	0	Y	Y	1	Y
41	1	4	34	F	0	Y	Y	1	Y
27	12	1	34	F	0	Y	Y N	1	Y
27A	2	2	34	F	0	Y	N	1	N
28	3	2	34	F	0	Y	N	1	Y

OF EXIT SIGNS - _____

COMMENTS: _____

JW

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: _____
CHECKED BY: _____
DATE: _____

BLDG.# 101
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
8	4	2	34	FL	OFF	Y	N	1	N
2A	4	4	34	FL	ON	N	Y	0	Y
2C	4	4	34	FL	ON	N	Y	0	Y
2B	3	4	34	FL	ON	N	Y	0	Y
5A	2	4	34	FL	ON	Y	Y	1	N
5B	2	4	34	FL	ON	Y	Y	1	N
6	4	4	34	FL	ON	Y	Y	1	Y
3A	5	4	34	FL	ON	Y	Y	1	N
3B	1	4	34	FL	ON	Y	Y	1	Y
19	3	2	34	FL	ON	Y	Y	1	Y
13	52	1	HAL. 21-75W	HAL. 21-75W	OFF	SPECIAL LIGHT CONTROLS			
4	3	2	34	FL	OFF	Y	N	1	N
20	1	2	34	FL	ON	Y	N	1	Y
16	1	2	34	FL	ON	Y	Y	1	Y
15	2	4	34	FL	ON	Y	Y	1	Y
14A	1	4	34	FL	OFF	Y	N	1	N
14B	2	4	34	FL	OFF	Y	N	1	N
65A	3	4	34	FL	OFF	N	Y	0	Y

OF EXIT SIGNS - 11

COMMENTS:

JW

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

FL. Gillem

BLDG. 101

JOB _____

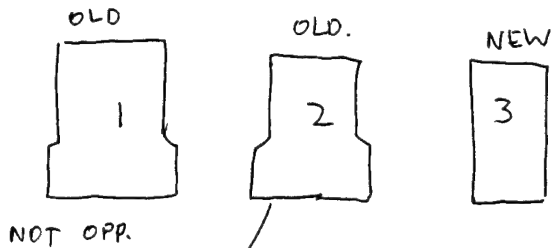
SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

MECH. ROOM



BURNER
DUNHAM-BUSH INC
MOD. C-240-GO-K
ASSEMBLY # 149132-G15
N.GAS
5250 MBTUH
SER 7806-C78862

1 PACIFIC STEEL BOILER CORP.

2 RAY HUSKY PACKAGED BOILER
NUMBER 12 SEP ; 1963
HEATING SURFACE 8-266 625 FL2

3 BRUNHAM CORP.

BOILER# FF-505

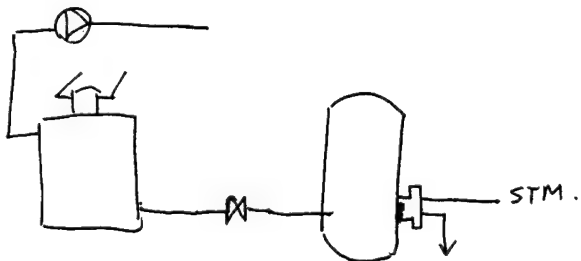
SERIAL# 7581959

OUTPUT 786 MBH

STEAM SQ.FL 2457

STEAM MBH 589.6

STEAM 15 PSI



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

WINDOW TROUBLE SPOTS
BLDG 101

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/2/92

CHECKED BY _____ DATE _____

SCALE _____

- 2ND FLOOR SOUTH - COMMANDING GENERAL'S OFFICE WINDOW ON SOUTH WALL IS CRACKED BUT LOW INFILTRATION. WINDOW ON EAST WALL ~~HAS~~ HAVE HIGH INFILTRATION, ONE WITH BROKEN FRAME, ~~OTHER~~ OTHER FRAME OK BUT NEEDS SEAL.
- 2ND FLOOR ~~SOUTHWEST~~ SOUTHWEST END OF HALLWAY WINDOW IS JAMMED OPEN DUE TO BROKEN LATCH CAUSING 2" AIR GAP.

BUILDING IS VERY DRAFTY

TEMPERATURES

1ST FLOOR, MAIN ENTRANCE \Rightarrow ~~66°F~~ 70°F

1ST FLOOR, NORTH \Rightarrow 69°F

1ST SOUTH \Rightarrow 72.5°F

OA TEMP - RAINY AT 1:00pm \Rightarrow ~~64°F~~ 56°F at 62% RH

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 101

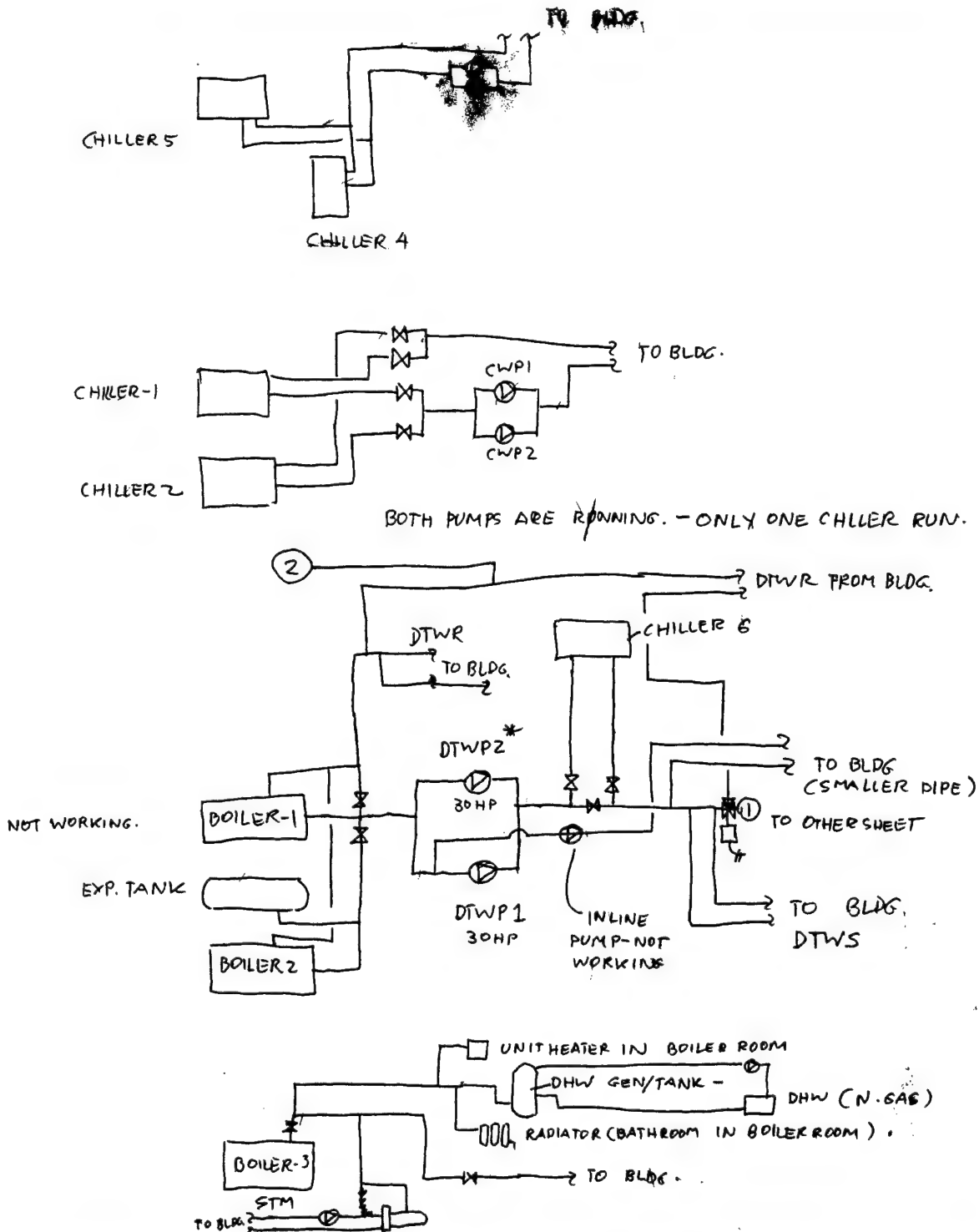
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1/3/92

CHECKED BY _____ DATE _____

SCALE _____



* ACCORDING TO OPERATOR PUMP VIBERATES WHEN RUN - MANUALLY SWITCH BETWEEN THE 2 PUMPS.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BUDG 101

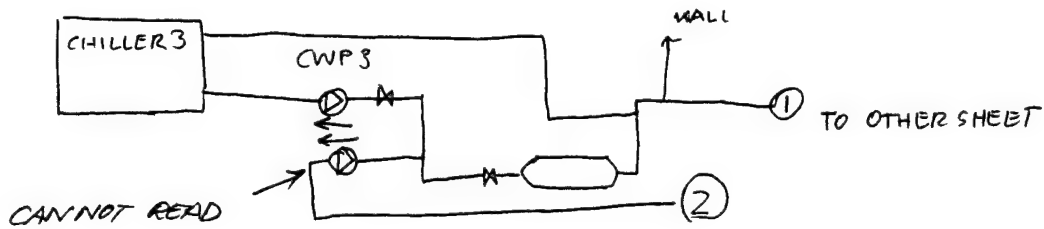
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1/3/92

CHECKED BY _____ DATE _____

SCALE _____



CWP-3 GE 1750 RPM
208V 3 HP 3 Ø 10.6A
CANNOT READ MOD # "OLD"

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

FL. Gillen
BLDG. 101

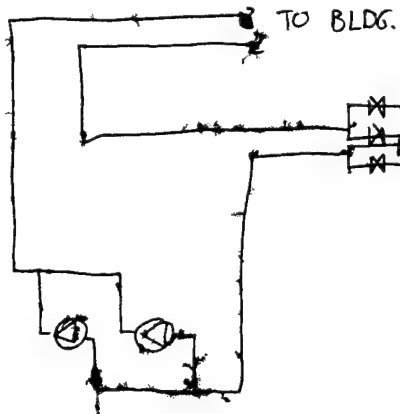
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____



CHILLER
PAD MONT

CARRIER

MOD 306B 5400

SER RD96703

COMP 1 200V 85.8 REA 34.5-RA

1 " 124.4

FAN MOTOR

200V 1.5 5.0 1/4 HP

200V 4.6 0.38 HP

MOD 306B 5400

SER RD96703

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

*Fl. Gillem
Building 101*

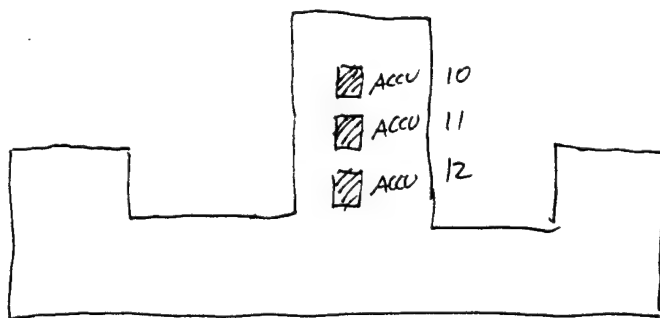
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-7-92

CHECKED BY _____ DATE _____

SCALE _____



ACCU-12 TRANE
AMERICAN STANDARD INC.

MOD.# TTA09DA300AA
SER# E23197815
COMP. 28.7A 208V 3 ϕ
COND. FAN
3.8A 208V 1 ϕ
230

ROOF TOP BLDG 101

ACCU-11 TRANE

AMERICAN STANDARD INC.

MOD# TTA120B300AB
SER# E24197948
COMP. 2-19.2A 208/230V 3 ϕ
COND. FAN
1-7.7A 208/230V 1 ϕ

ACCU-10 TRANE

MOD# TTA180B300AA
SER# E19198827
COMP. 2-24.1A 208/230V 3 ϕ
COND FAN
2-3.8A 208/230V 1 ϕ

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY CEL DATE _____

CHECKED BY _____ DATE _____

SCALE _____

101

RUNS 24 HRS FOR COMP. ROOM
CHW PUMP - 1

MOTOR, MARATHON 1

MODEL UVI 182TDR7026 DFL

FRAME 182T

3 ϕ

208V 9.4A

1760 RPM

3HP

81.5 EFF

77.7 PF

CHW PUMP - 2 SAME, OFF (BACKUP)

PUMP TALC MODEL - FM 150B

72 GPM

55 FT HD

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 101

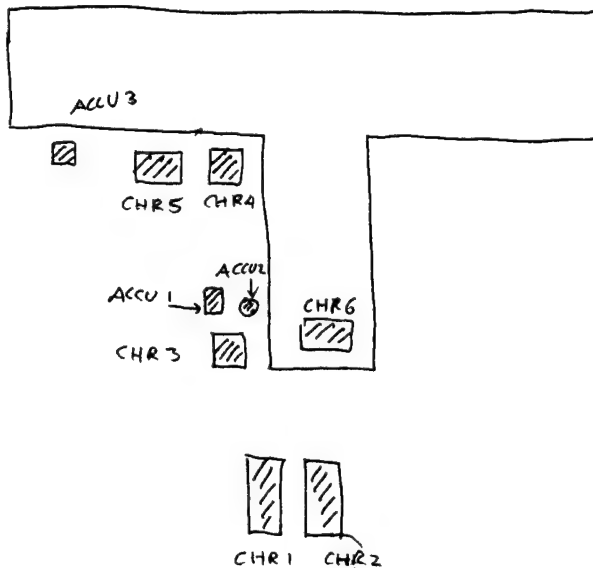
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1/3/92

CHECKED BY _____ DATE _____

SCALE _____



ACCU-1 CARRIER

MOD 38AE-014-500

SER Z981585

COMP. 1 208V 3Ø 49.3 A

COND. FAN 1 208/230V 1Ø 3.7 A

1 208/230V 1Ø 4.3 A

ACCU-2 CARRIER

MOD 38T8048510

SER. 2389E10366

COMP 208/230V 3Ø 17.6 A

FAN 208/230V 1Ø 1.6 A.

CHILLER 6 CARRIER

MOD 30GB175600

SER T296253

COMP 4 460V 3Ø 52.1 A

4 460V 3Ø 52.1 A

COND FAN 6 460V 3Ø 3 A 1.75 HP

6 " _____ "

CHILLER 4 - SNYDER GENERAL

MOD. ALR040C

SER 5UB0176600

COMP 1 20HP 63 RLA 208V 3Ø

1 25 HP 77 RLA 208V 3Ø

COND FAN

4 1 HP 4 FLA 208V 3Ø

CHILLER 5 CARRIER

MOD 30GB070530

SER. T698036

COMP. 2 208V 3Ø 119 RLA

1 240V 3Ø 76 RLA

COND. FAN

6 208V 3Ø 6.6 A 1.75 HP

ACCU-3 G.W. BOHN A/C & R DIVISION

MOD DVS0102B

SER BJK8122

208V 3Ø 2 FAN @ 1/2 HP. 2.4 A

Ⓢ (217) 446-3710

CHILLER-3 TRANE

MOD CGAA-4006-FA-LA

SER L6H171712

TYPE NO. 561-0061

COMP. 1 200-208V 3Ø 144 A

COND 3 200-208V 3Ø 6 A 1 HP

VAR SPD FAN MTR 1 1Ø 6.7 A 1 HP.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

CARRIER

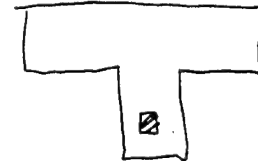
SERVE FIRST FLOOR

MOD. 40RR-012-550

SER. T981150

230V 3 ϕ 6.3A.

COOLING ONLY (DX)



CARRIER (SMALL)

SER 4489H05305

240V 1 ϕ 0.5HP 1.8A.

COOLING ONLY (DX)

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

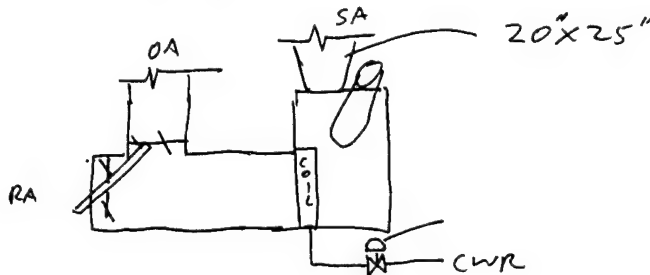
SCALE _____

DATA AIRE INC.

AHV 1ST FLOOR NEXT TO DATA AIRE

MCQUAY SER 3UB00102-06

HAS OA/RA DAMPER FIXED POSITION ALL WE HAVE TO DO IS
OA DAMPER IN CLOSED POSITION
ADD CONTROL, MOTOR NOT ACCESSABLE



- PNEUMATIC CONTROL
- WITH TIME CLOCK WORKING.
- MODULATE VALVE FROM RETURN AIR.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

FORTH FLOOR

AHU 1

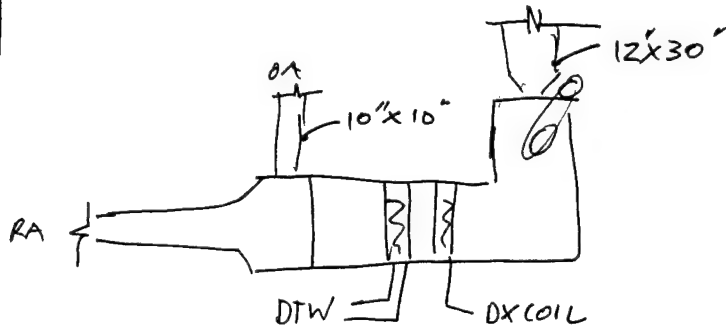
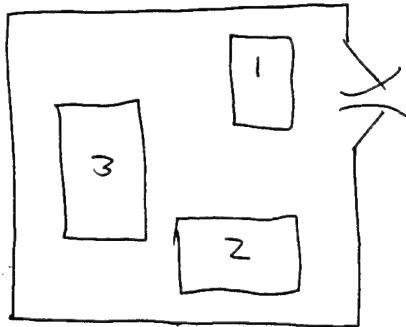
MARATHON

MOD. PVL145TTDR7026DL
SER

FRAME 145T

208V 6A 3Ø 1735RPM

82.5 % eff 2HP.



HAS OA DAMPER ACTUATOR (ELEC.)

AHU 2

BUILDING 102

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ. #

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

JW

CHECKED BY:

DATE:

1/7/92

BLDG. #

102

ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
MEN'S ROOM SOUTHSIDE	128°F
AIR TEMP AT 1:30pm ⇒ 74°F	
AIR TEMP IN SHOP AREA ⇒ 79°F	
AIR TEMP IN WOOD SHOP ⇒	
WOODSHOP SINK	138°F
PROBLEMS:	

COMMENTS:

HW PIPES MUST BE VERY RUSTY

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: JW
CHECKED BY:
DATE: 1/7/92

BLDG.# 102
ECO 5

MOTORS

MOTOR #	CONDENSATE PUMPS 1 & 2	HP	3/4	PH	3	RPM	1750
MODEL #		VOLTS	208/406	AMPS	5.6/2.8		
SERIAL #		PRESENT HR.		TO			
MFG	LOUIS ALLIS	REQUIRED HR.		TO			
FRAME	225YE	EFF.					
DESCRIPTION	COMMENTS LOCATED IN WOOD SHOP						
TYPE: 05 CLASS: N MOTOR NO.: 41728A							

MOTOR #	EXHAUST FAN #1	HP	1/2	PH	1	RPM	1725
MODEL #	5K454C	VOLTS	115	AMPS	8.2		
SERIAL #		PRESENT HR.		TO			
MFG	DAYTON	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	COMMENTS LOCATED IN WOOD SHOP						

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	COMMENTS						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KE

CHECKED BY:

DATE:

1-7-92

BLDG.#
ECO 5

1021

Ft-Gillem

MOTORS

MOTOR #	HP	PH	RPM
	1	3	1800
MODEL #	VOLTS	AMPS	
6410 453	208V	3	
SERIAL #	PRESENT HR.	TO	
MFG	REQUIRED HR.	TO	
FRAME	EFF.		
182			
DESCRIPTION	COMMENTS		
AHU 1 & AHU 2	T'STAT CONTROL		

MOTOR #	HP	PH	RPM
MODEL #	VOLTS	AMPS	
SERIAL #	PRESENT HR.	TO	
MFG	REQUIRED HR.	TO	
FRAME	EFF.		
DESCRIPTION	COMMENTS		

MOTOR #	HP	PH	RPM
MODEL #	VOLTS	AMPS	
SERIAL #	PRESENT HR.	TO	
MFG	REQUIRED HR.	TO	
FRAME	EFF.		
DESCRIPTION	COMMENTS		

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

DATE:

1-7-92

BLDG.#

FL. Gillem

ECO 5

102

MOTORS

MOTOR #	<u>1</u>	HP	<u>3/4</u>	PH	<u>1</u>	RPM	<u>1725</u>
MODEL #	<u>6N624A</u>	VOLTS	<u>115</u>	AMPS	<u>12</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>DAYTON</u>	REQUIRED HR.		TO			
FRAME	<u>56</u>	EFF.					
DESCRIPTION	<u>EXHAUST FAN #1</u>		COMMENTS <u>NOT RUNNING.</u>				
	<u>IN SHOP AREA.</u>						

MOTOR #	<u>2</u>	HP	<u>1/4</u>	PH	<u>1</u>	RPM	<u>1725</u>
MODEL #		VOLTS	<u>115</u>	AMPS	<u>4.5</u>		
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>UNIT HEATER #1</u>		COMMENTS <u>RUNNING.</u>				
	<u>STM</u>						

MOTOR #	<u>3</u>	HP	<u>1/2</u>	PH	<u>1</u>	RPM	<u>1725</u>
MODEL #		VOLTS	<u>230</u>	AMPS	<u>3.3</u>		
SERIAL #	<u>1178920-B</u>	PRESENT HR.		TO			
MFG	<u>WESTINGHOUSE</u>	REQUIRED HR.		TO			
FRAME	<u>D56</u>	EFF.					
DESCRIPTION	<u>UNIT HEATER #2</u>		COMMENTS <u>NOT RUNNING.</u>				
	<u>STM</u>						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KG
CHECKED BY:
DATE: 1-7-92

BLDG.# 102
ECO 5

FL Gillem

MOTORS

MOTOR #	<u>4</u>	HP	<u>1/6</u>	PH	<u>1</u>	RPM	
MODEL #		VOLTS	<u>115V</u>	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>UNIT HEATER 3 & 4</u>		COMMENTS <u>NO NAME PLATE</u>				
	<u>STEAM COIL.</u>		<u>T'STAT CONTROL</u>				

MOTOR #	<u>5</u>	HP	<u>1/4</u>	PH	<u>1</u>	RPM	
MODEL #		VOLTS	<u>115V</u>	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG	<u>TRANE</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>UNIT HEATER 5 & 6, 7</u>		COMMENTS <u>T'STAT CONTROL</u>				

MOTOR #	<u>6</u>	HP	<u>1/2</u>	PH	<u>1</u>	RPM	<u>1725</u>
MODEL #	<u>5K45AC</u>	VOLTS	<u>115</u>	AMPS	<u>8.2</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>DAYTON</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>EXH. FAN 3 & 5, 6</u>		COMMENTS <u>NOT RUNNING</u>				
			<u>ONLY SUMMER</u>				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ. #
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE:

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

OF

BLDG. #
ECO 10

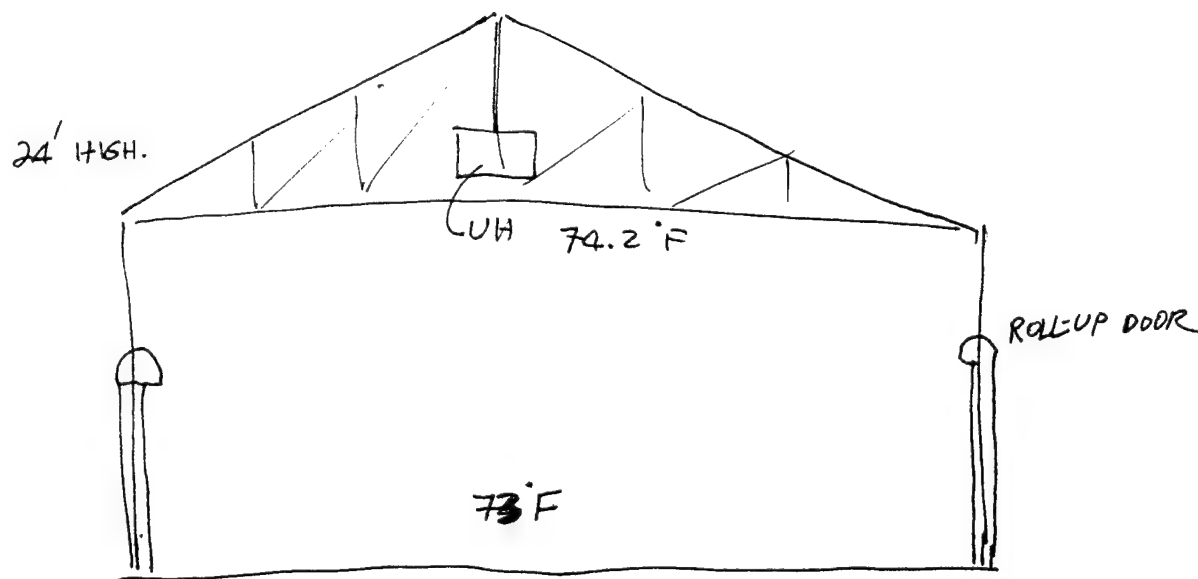
102
Fl. Gillem

1-7-92

AIR STRATIFICATION

LOCATION	WELDING SHOP	REQ. TEMP.	
TEMP. AT TSTAT		SOURCE	
TEMP. AT CEILING	74.2°F	OPP. HOURS	7:00 TO 4:00
TEMP. AT FLOOR	73°F		

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ. #
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE:

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000
OF
KC
1-7-92

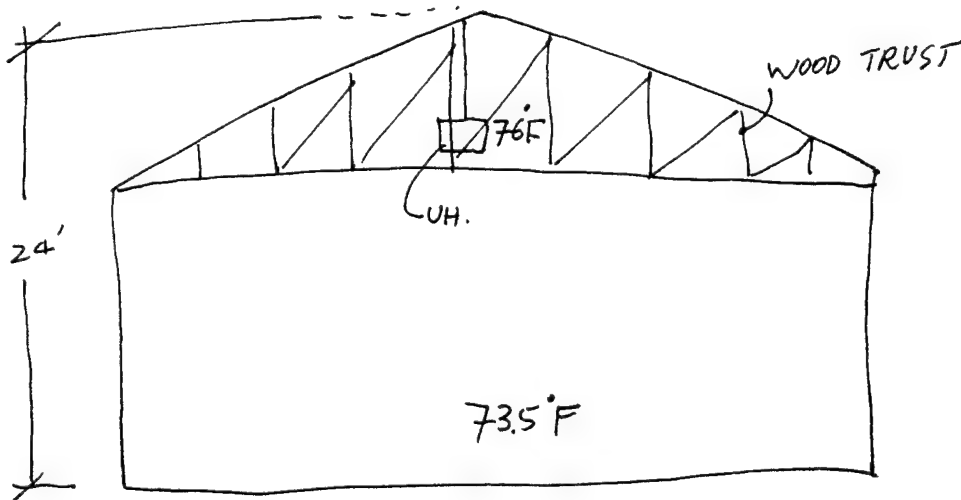
BLDG.#
ECO 10

102

AIR STRATIFICATION

LOCATION	WOODSHOP	REQ. TEMP.	
TEMP. AT TSTAT		SOURCE	UNIT HEATER
TEMP. AT CEILING	76	OPP. HOURS	7:30 TO 4:00
TEMP. AT FLOOR	73.5		

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



WOOD SHOP 2 UH.

COMMENTS:

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 102

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/7/92

CHECKED BY _____ DATE _____

SCALE _____

AC UNIT # 1 ^{SOUTH} (WEST)

CARRIER MOD# 38AEO12500
S# R295693

COMPRESSOR (1) 208V 3 ϕ 60Hz 43.6 RLA
170 LRA

R-22

FANS (2) 208V 4FLA

AC UNIT # 2 ^{SOUTH} (EAST)

CARRIER MOD# 38AEO12500
S# R295692

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

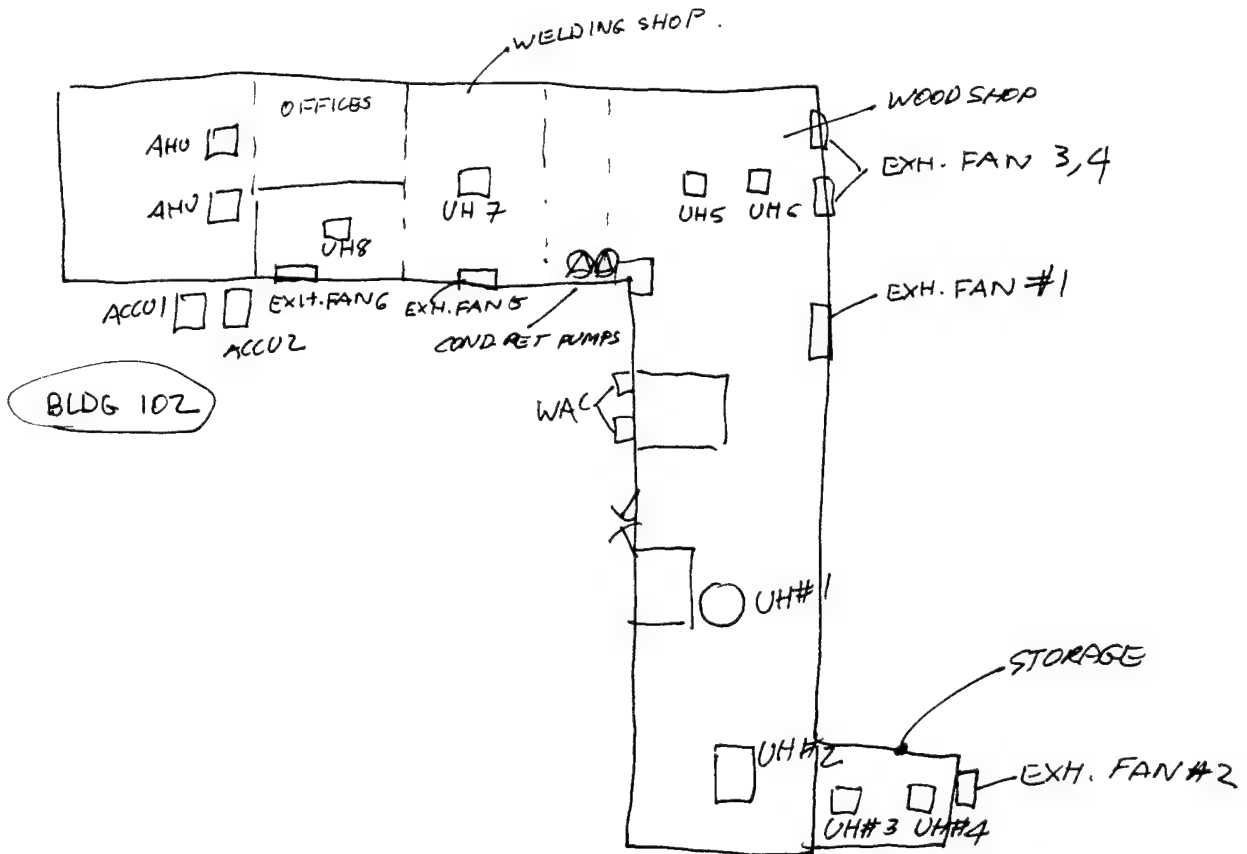
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY WCL DATE 1-7-92

CHECKED BY _____ DATE _____

SCALE _____



BUILDING 103

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

BLDG.# 103
ECO 4

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: KC
CHECKED BY: _____
DATE: 1/2/92

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
AHU ROOM (WASH SINK)	133.4
BATHROOM.	133.9
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CHECKED BY:

DATE:

BLDG.#

103

ECO 5

MOTORS

MOTOR #	<u>10</u>	HP	<u>3</u>	PH	<u>3</u>	RPM	<u>1750</u>
MODEL #	<u>6-342912-13</u>	VOLTS	<u>200</u>	AMPS	<u>9.6</u>		
SERIAL #		PRESENT HR.	<u>0</u>	TO	<u>2400</u>		
MFG	<u>CENTURY</u>	REQUIRED HR.	<u>0</u>	TO	<u>2400</u>		
FRAME	<u>S182T</u>	EFF.					
DESCRIPTION	<u>A1W</u>	COMMENTS					

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.	<u>0</u>	TO	<u>2400</u>		
MFG		REQUIRED HR.	<u>0</u>	TO	<u>2400</u>		
FRAME		EFF.					
DESCRIPTION	<u>ROOF TOP - 1</u>	COMMENTS	<u>NO ACCESS</u>				
<u>SERIES TELEPHONE EQUIP. ROOM</u>							

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.	<u>0</u>	TO	<u>2400</u>		
MFG		REQUIRED HR.	<u>0</u>	TO	<u>2400</u>		
FRAME		EFF.					
DESCRIPTION	<u>ROOF TOP - 2</u>	COMMENTS	<u>NO ACCESS</u>				
<u>SERIES TELEPHONE EQUIP. ROOM</u>							

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/2/91

BLDG.# 103
ECO 15

1st FLOOR
FIRE STATION
LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
1	2	4	34	FLOUR	ON	YES	YES	1	YES
2	4	2	34	F	OFF	YES	NO	2	NO
3	2	2	34	F	ON	YES	NO	1	YES
4	1	2	34	F	OFF	YES	NO	1	NO
5A	1	1	150	I	OFF	YES	NO YES	1	NO
5B	1	1	150	I	"	"	NO	1	NO
6	2	4	34	F	OFF	YES	YES	1	NO
7	1	1	150	I	ON	YES	NO	1	YES
8	5	2	8' 40	F	ON	YES	NO	4	YES
9	5	2	34	F	OFF	YES	NO	2	NO
10	1	1	100	I	ON	YES	NO	1	NO
10	1	2	34	F	ON	"	NO	1	NO
12	2	2	40	F	OFF	YES	NO	1	NO
13	1	1	40	F	OFF	YES	NO	1	YES
14	1	2	8'	F	ON	YES	YES	1	YES

OF EXIT SIGNS - _____

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ. # EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: JW

CHECKED BY: _____

DATE: 1/2/92

BLDG.#
EC0 15

2nd FLOOR
TELEPHONE SWITCHING
LIGHTING

CALCULATED BY: JW
CHECKED BY:
DATE: 1/2/0

[illegible]

OF EXIT SIGNS -

COMMENTS:

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

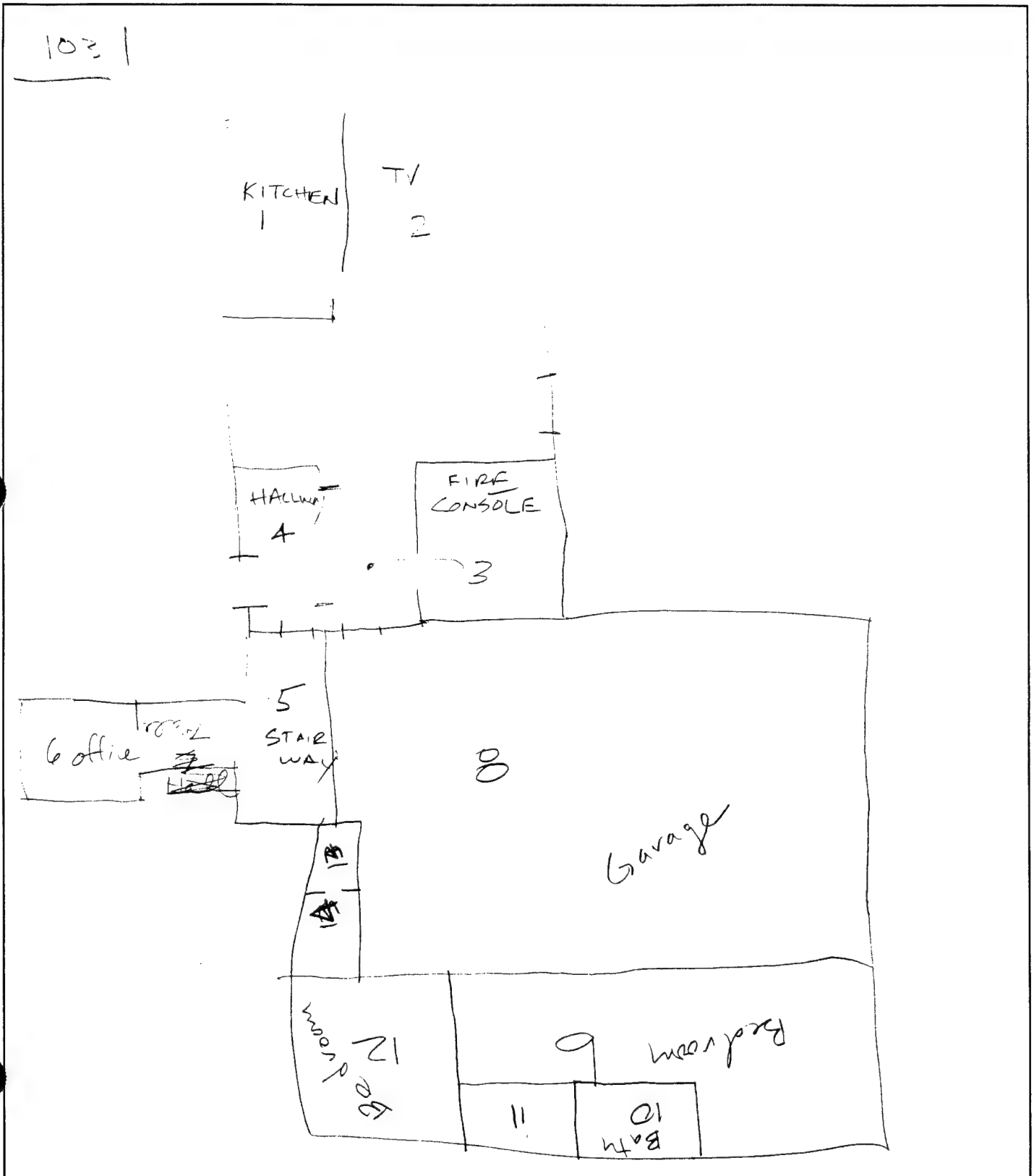
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY SEM DATE 1/2/92

SCALE _____



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

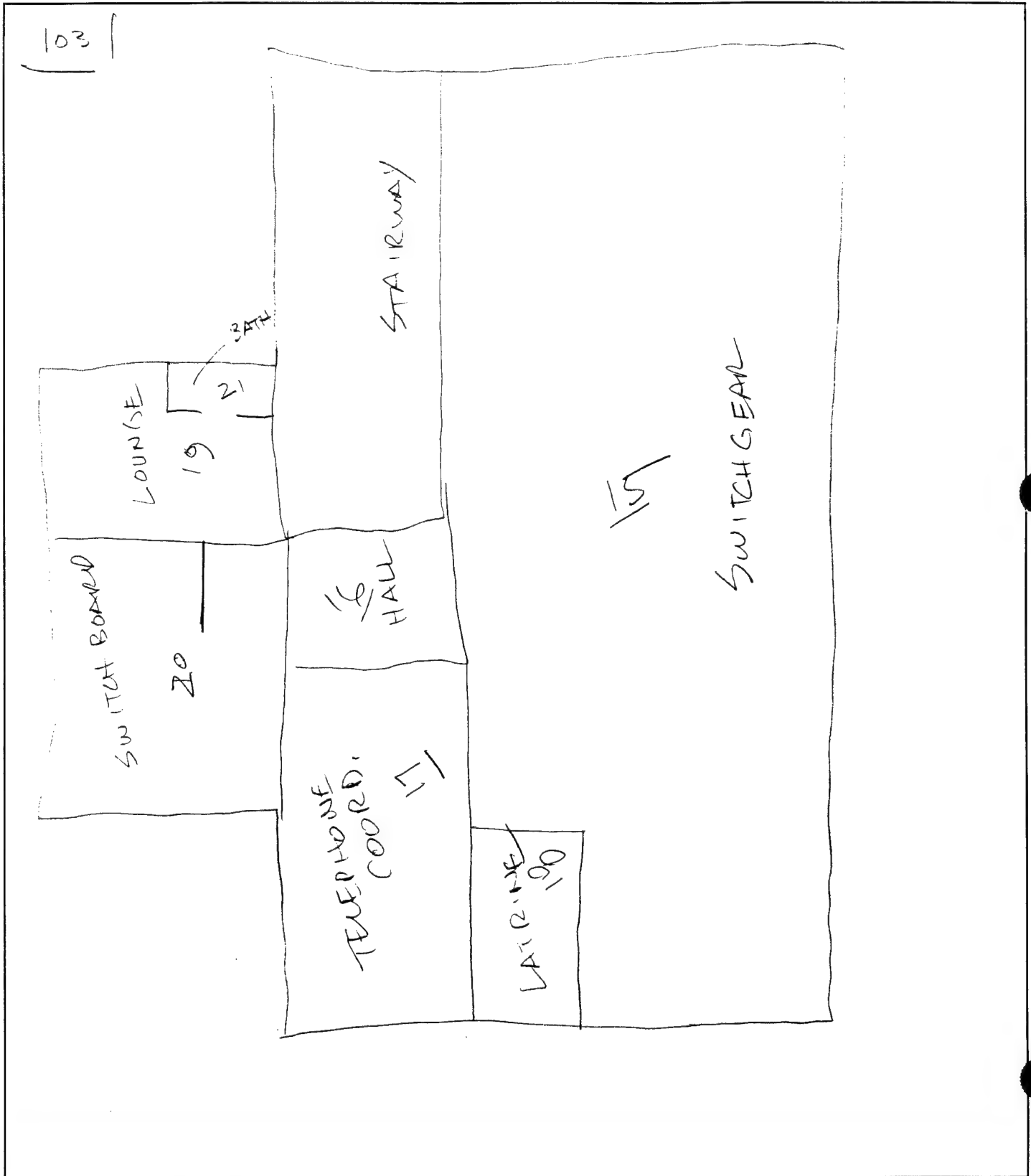
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY CPE DATE 1/2/92

CHECKED BY _____ DATE _____

SCALE _____



BUILDING 133

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ.#
SHEET NO.
CALCULATED BY: JW
CHECKED BY:
DATE: 1/2/92

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

BLDG.# 133
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
NORTH EAST MEN'S RM	155°F (700/107)
SOUTH KITCHEN SINK	152°F
PROBLEMS:	

COMMENTS:

HOT WATER LINES TO NE BATHROOM
VERY RUSTY (DIRTY WATER)

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1/2/92

BLDG.# A 133
ECO 5

MOTORS

MOTOR #	1	HP	3	PH	3	RPM	1735
MODEL #	SBDP	VOLTS	200	AMPS	11.4		
SERIAL #	7110N	PRESENT HR.	0	TO	2400		
MFG	WESTINGHOUSE	REQUIRED HR.		TO			
FRAME	182T	EFF.					
DESCRIPTION	AHU FAN (UPSTAIR) ^{#1} COMMENTS SECOND FLOOR						

MOTOR #	2	HP	3	PH	3	RPM	1735
MODEL #	SBDP	VOLTS	200	AMPS	11.4		
SERIAL #	71101	PRESENT HR.	0	TO	2400		
MFG	WESTINGHOUSE	REQUIRED HR.		TO			
FRAME	182T	EFF.					
DESCRIPTION	AHU FAN (UPSTAIR) ^{#2} COMMENTS SECOND FLOOR						

MOTOR #	3	HP	1.5	PH	1	RPM	3450
MODEL #	8-113851-23	VOLTS	230	AMPS	8		
SERIAL #		PRESENT HR.		TO			
MFG	Gould	REQUIRED HR.		TO			
FRAME	L56	EFF.					
DESCRIPTION	AHU FAN (DOWNSTAIR) ^{#3} COMMENTS CONTROL OFF T'STAT						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY:
CHECKED BY:
DATE:

BLDG.#
ECO 5

MOTORS

MOTOR #	<u>4</u>	HP	<u>?</u>	PH		RPM	
MODEL #	<u>G-H1201-20 M</u>	VOLTS	<u>115</u>	AMPS	<u>?</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>CARRIER, COMFORTMAKER</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>AHU BOTTOM FLOOR #4</u>	COMMENTS	<u>NOT ACC.</u>				

MOTOR #	<u>5</u>	HP	<u>1/8</u>	PH	<u>1</u>	RPM	
MODEL #	<u>UHRA-0810B</u>	VOLTS	<u>115-240</u>	AMPS	<u>2 0.8</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>RUUD</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>AHU #5</u>	COMMENTS	<u>HOME TYPE UNIT</u>				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

133

• ACCU-1 SERIES _____

RUUD AIR CONDITIONER

MODEL UACC-056CAS

SER NO. 4147M2890 9117

208V 3 ϕ 60 Hz

20.5A

est. 5 TON

• ACCU-2 & 3 NO NAMEPLATE SERIES WALK IN COOLERS

• ACCU-4 & 5 OFF SERIES CARRIER

est 10 ton

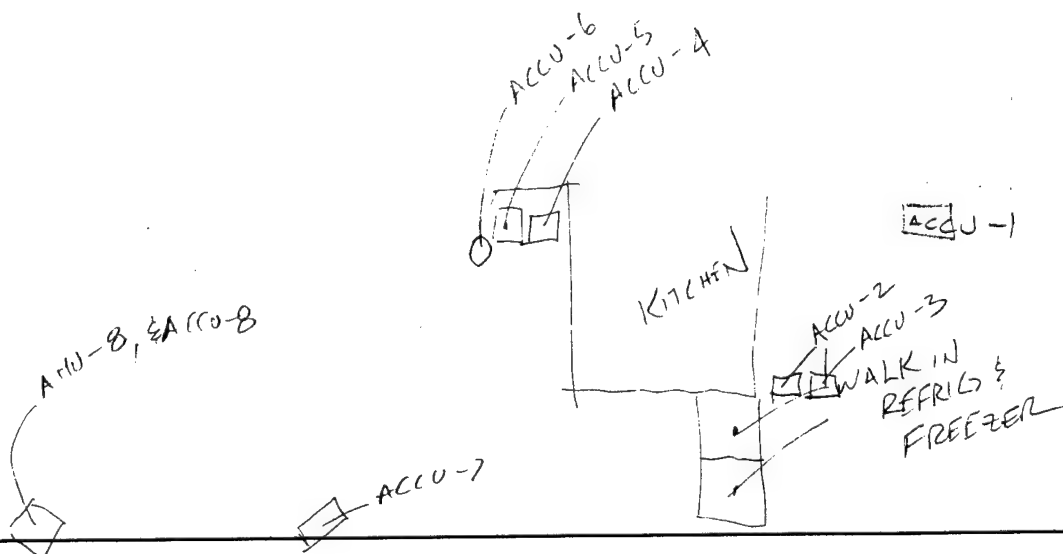
MODEL 38AE 016 500

SER 239 OF 18891

COMP 1, 208V, ~~3.7A~~ 63.6A, 3 ϕ

FAN 1, 208V, 3.7A 1 ϕ

2, 208V, 4.3A 1 ϕ



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

133

ACCU-6 REFRIG _____

OFF
CLIMATE CONTROL

MODEL A-R 801060-25

SFR 0135810-422-0034

COMP 230V, 17.3A, 3 ϕ

FAN 230V, 2.5A, 1 ϕ

ACCU-7 (OFF) STOPS _____

ROOD AIR CONDITIONER

MODEL UPFA 018JAS

SER NO 429 A M 3588 1365

208V, 10.5A, 1 ϕ

AHU-8 & ACCU-8 (RUNNING)

TRANE, FORCED AIR FURNACE w/ACCU

MODEL BYC 024H 1LOAA

TYPE 168-740-1-A

60,000 BTU IN N.GAS

1 COMP- 11.8A, 208V, 1 ϕ

1 COND FAN - 1.7A, 208V, 1 ϕ , 1/4 HP

1 EVAP FAN - 2.5A, 208V, 1 ϕ , 1/4 HP

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY EL DATE 1/2/92

CHECKED BY _____ DATE _____

SCALE _____

133

GAS FIRED WATER HEATERS

-1, AG SMPL

MODEL BT 65 930A, 50 GAL
N. GAS FIRED

50,000 BTU (H.P. INPUT)
+ 5.5 GAL. HR

-2, AG SMPL

MODEL BT 270 830, 100 GAL
N. GAS FIRED

270,000 BTU (H.P. INPUT)
22.9 GAL. HR

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 133

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/2/92

CHECKED BY _____ DATE _____

SCALE _____

TEMPERATURES

NORTH EAST WING HALL \Rightarrow 62°F

DINING HALL \Rightarrow 69°F at 2:00pm

BUILDING 207

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ.#

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

JW

CHECKED BY:

DATE:

1/3/92

BLDG.#
ECO 4

207

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
SOUTH (BAY 1) FAUCET FAUCET	142°F
BAY-3 MEN'S	142°F
BAY-7 BREAKROOM	125°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KL

CHECKED BY:

DATE:

1/3/92

BLDG.#

207

ECO 5

MOTORS

MOTOR #	1	HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG	SINGER	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	FURNACE SOUTH END, (AHU-1)		COMMENTS NOT ACCESSABLE - HOME TYPE				

MOTOR #	2, 3, 5, 6, 7	HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME	K&F	EFF.					
DESCRIPTION	UNIT HEATER		COMMENTS				
SOUTH END WAREHOUSE							

MOTOR #	8	HP	5	PH	3	RPM	1740
MODEL #	TVK184TTDR7627ACL	VOLTS	200	AMPS	14.8		
SERIAL #		PRESENT HR.		TO	2400		
MFG	MARATHON	REQUIRED HR.		TO	4:30		
FRAME	184T	EFF.	85.5				
DESCRIPTION	AHU2 SERVE OFFICES		COMMENTS HW & DX COIL				
SOUTH END							

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY:
CHECKED BY:
DATE:

BLDG.#
ECO 5

207

MOTORS

MOTOR #	12 0700504	HP	5	PH	3	RPM	1720
MODEL #		VOLTS	208-230	AMPS	14-12.9		
SERIAL #	U54052620	PRESENT HR.	0	TO	2400		
MFG	AC SMITH	REQUIRED HR.	7:00	TO	4:30		
FRAME	184T	EFF.					
DESCRIPTION	AHU3 SOUTH OFFICE	COMMENTS	IN MECHROOM WITH ANOTHER AHU.				

MOTOR #	13 3N558A	HP	5	PH	3	RPM	1730
MODEL #		VOLTS	208-230	AMPS	14.2-13.4		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	DAYTON	REQUIRED HR.	7:00	TO	4:30		
FRAME	K184T	EFF.					
DESCRIPTION	AHU4 SOUTH OFFICE	COMMENTS	KVAR 1.3 IN MECHROOM WITH ONE ABOVE				

MOTOR #	14	HP	1	PH		RPM	1725
MODEL #	186277-01	VOLTS	230	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG	CENTURY	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	COMPUTER ROOM	COMMENTS	SOUTH END				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY:
CHECKED BY:
DATE:

BLDG.#
ECO 5

207

MOTORS

MOTOR #	9	HP	1/8	PH	1	RPM	1725
MODEL #		VOLTS	115	AMPS	2.4		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	BELL GOSSETT	REQUIRED HR.	7:30	TO	4:00		
FRAME		EFF.					
DESCRIPTION	HW PUMP		COMMENTS				
BOILET TO AHU COIL.							
MOTOR #	10	HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	ACCU FOR AHU		COMMENTS				
MOTOR # 8							
MOTOR #	11	HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG	DAYTON	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	ELECTRIC HEATER & BLOWER		COMMENTS VERY SMALL				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

PROJ. #

SHEET NO.

CALCULATED BY:

CHECKED BY:

DATE:

Ft. McPherson/Ft. Gillem Energy Study

EMC # 3105.000

OF

KC

1/3/92

BLDG. #
ECO 10

207

AIR STRATIFICATION

LOCATION

STORAGE

REQ. TEMP.

TEMP. AT TSTAT

SOURCE

TEMP. AT CEILING

OPP. HOURS

TO

TEMP. AT FLOOR

60°F

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

COMPUTER & SUPPLIES STORAGE

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

PROJ. #

SHEET NO.

CALCULATED BY:

CHECKED BY:

DATE:

Ft. McPherson/Ft. Gillem Energy Study

EMC # 3105.000

OF

KL

1/3/92

BLDG.#
ECO 10

207

AIR STRATIFICATION

LOCATION NORTH END

REQ. TEMP.

TEMP. AT TSTAT

SOURCE

UNIT HEATER

TEMP. AT CEILING

68° F

OPP. HOURS

TO

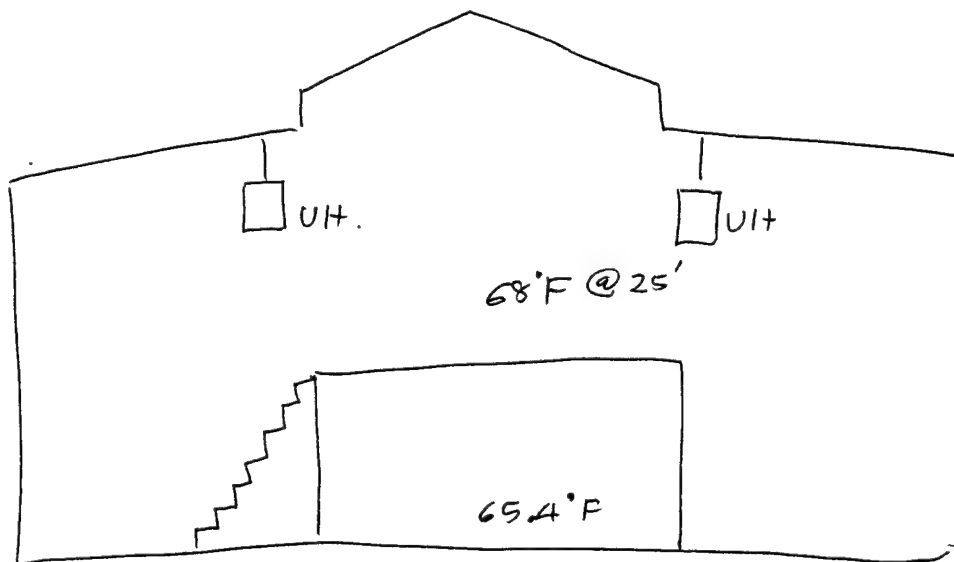
TEMP. AT FLOOR

65.4° F

T' STAT

GAS FIRE

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

BAY 7

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ. #
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE:

Ft. McPherson/Ft. Gillem Energy Study

EMC # 3105.000

OF

KC

1/3/92

BLDG. #
ECO 10

207

AIR STRATIFICATION

LOCATION

207 SOUTHEAST

REQ. TEMP.

TEMP. AT TSTAT

SOURCE

TEMP. AT CEILING

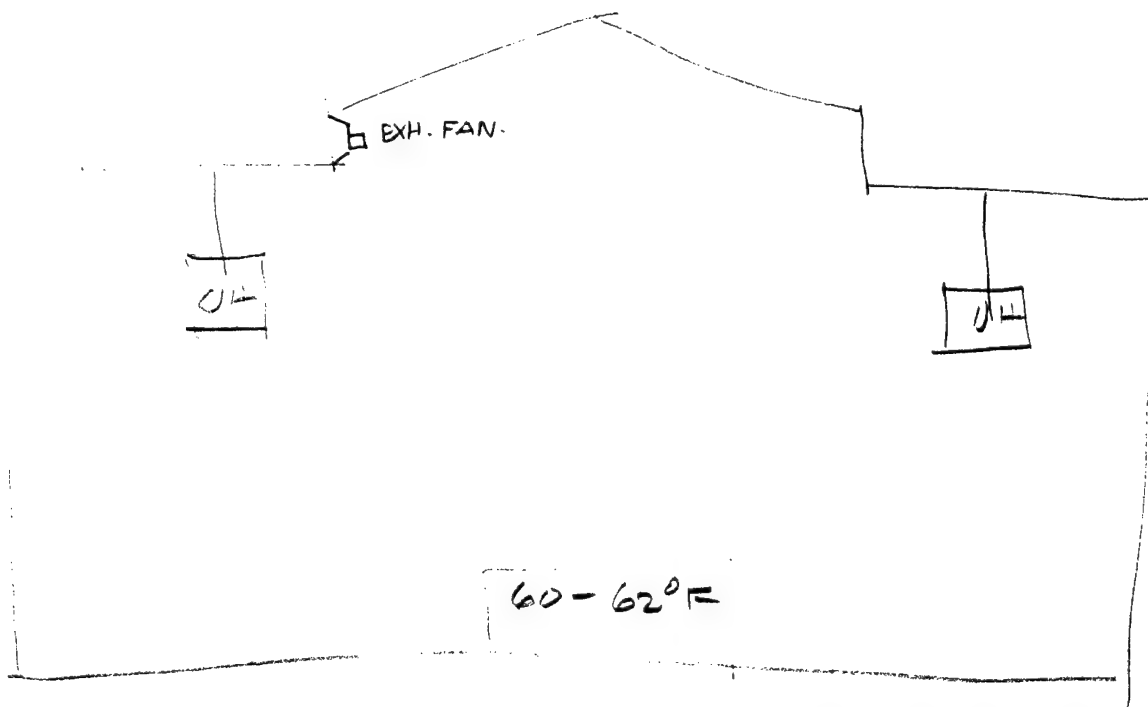
OPP. HOURS

7:30

TO 4:30

TEMP. AT FLOOR

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

FOOD STORAGE

DENVER * ATLANTA * GERMANY

PROJ.#

SHEET NO.

OF

CALCULATED BY:

JW

CHECKED BY:

DATE:

1/6/92

EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS -

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/3/91

BLDG.# 207
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
54	SAME AS	45	53						
55	2	4	34	F	OFF	Y	Y	1	NO
56	88	2	34	F	ON	Y	NO	8 88	NO
57	6	4	34	F	ON	Y	NO Y	1	Y
58	6	4	34	F	ON	Y	Y	1	Y
59	3	4	34	F	OFF	Y	Y	1	NO
60	90	2	34	F	ON	Y	N	8 90	N
61	3	2	34	F	OFF	Y	Y	1	NO
62	3	4	34	F	ON	Y	NO	1	Y
63	3	2	34	F	ON	Y	N	1	NO
64	$\frac{1}{2}$	$\frac{1}{20}$	$\frac{100}{34}$	$\frac{I}{F}$	ON	Y	N	1	NO
65	2	2	8'	F	OFF	Y	N	1	NO
66	1	2	8'	F	ON	Y	N	1	YES
67	1	1	60	I	ON	Y	Y	1	YES

OF EXIT SIGNS - _____

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

BLDG.# 207
ECO 15

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/3/92

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
36	4	4	34	F	ON	Y	Y	1	Y
37	<i>locked</i>								
38	35	2	8'	F	ON	Y	NO	Breakers	Y
39	6	4	34	F	ON	Y	NO	1	NO
40	6	4	34	F	ON	Y	NO	1	NO
41	66	2	8'	F	ON	Y	NO	2	Y
42	40	2	8'	F	ON	Y	NO	?	Y
43	1	2	34	F	ON	Y	NO	1	Y
44	6	4	34	F	OFF	Y	Y	1	NO
① 45	2 21	2	34	F	ON	Y	NO	1	NO
46	4	4	34	F	OFF	Y	Y	1	NO
47	3	4	34	F	OFF	Y	Y	1	NO
48	2	4	34	F	OFF	Y	Y	1	NO
49	2	4	34	F	ON	Y	Y	1	YES
50	4	4	34	F	ON	Y	Y	1	Y
51	4	4	34	F	ON	Y	Y	1	NO
52	2	4	34	F	ON	Y	Y	1	Y
53	6	4	34	F	ON	Y	N	1	Y

OF EXIT SIGNS - _____

COMMENTS: ① 4 corner lights are emergency

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ.# EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: JW

CHECKED BY:

DATE: 1/3/92

BLDG.# 207
EC0 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
18									
19	2	4	34	F	ON	Y	NO	1	NO
20	2	4	34	F	ON	Y	Y	1	YES
21	6	2-u	?	F	ON	Y	Y	1	NO
22	6	2-u		F	ON	Y	Y	1	Y
23	1	1							
24	6	4	34	F	ON	Y	NO	1	N
25	8	4	34	F	ON	Y	Y	2	Y
26	3	4	34	F	ON	Y	NO	1	NO
27	$\frac{6}{2}$	$\frac{4}{2-u}$	$\frac{34}{2}$	F	ON	Y	NO	2	NO
28	6	2-u		F	ON	Y	Y	1	NO
29	14	4	34	F	ON	Y	NO	3	NO
30	$\frac{2}{1}$	$\frac{4}{2-u}$	$\frac{34}{1}$	F	ON	Y	Y	1	NO
31	$\frac{2}{2}$	$\frac{4}{2-u}$	$\frac{34}{2}$	F	OFF	Y	Y	1	NO
32	$\frac{2}{2}$	$\frac{4}{2-u}$	$\frac{34}{2}$	F	ON	Y	NO	1	Y
33	6	4	34	F	ON	Y	NO	1	NO
34	2	4	34	F	ON	Y	Y	1	Y
35	2	2	8'	F	OFF	Y	Y	1	NO

OF EXIT SIGNS - _____

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ. # EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: JW

CHECKED BY: _____

DATE: 1/3/92

BLDG. # 207
EC0 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
1	10	4	34	F	ON	Y	NO	2	NO
2	2	4	34	F	ON	Y	YES	1	YES
3	1	2	8'	F	OFF	Y	NO	1	NO
4	SAME ↑↑								
5	15	2	8'	F	ON	Y	NO	(3) BREAKERS	NO
6	4	4	34	F	ON	Y	Y	1	YES
7	43	2	8'	F	ON	Y	NO	BREAKERS	YES
8	2	2	8'	F	ON	Y	NO	1	NO
9	3	4	34	F	ON	Y	NO	1	NO
10	1	1	34	F	ON	Y	NO	1	Y
11	4	2	34	F	OFF	Y	YES	1	NO
12	5	4	34	F	ON	Y	Y	1	NO
13	6	4	34	F	ON	Y	Y	1	NO
14A	2	4	34	F	ON	Y	N	1	NO
14B	4	4	34	F	ON	Y	N	1	NO
15	6	4	34	F	ON	Y	N	1	NO
16	7	4	34	F	ON	Y	N	1	NO
17	4	2-U	?	F	OFF	Y	Y	1	NO

OF EXIT SIGNS - _____

COMMENTS: _____

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

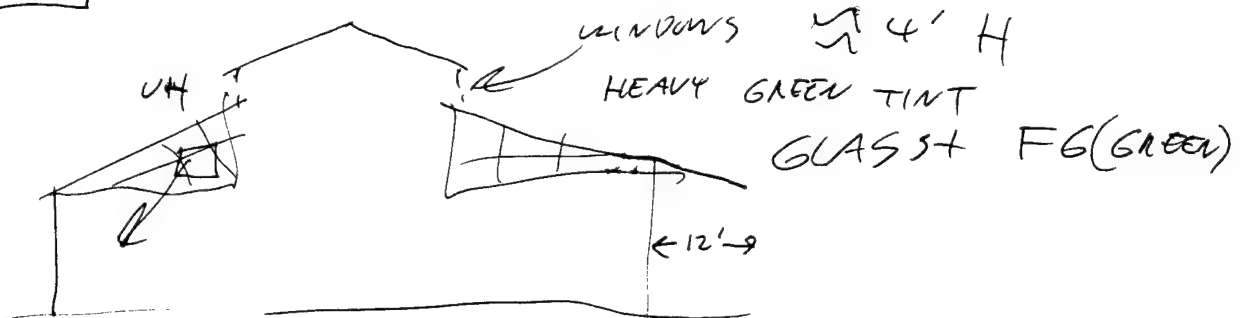
SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

207



SINGLE PANE GLASS @ 8'x8'

1" CRACK UNDER STEEL MAIN DOORS

$\frac{1}{2}$ " 11 PERMEATOR GAUGE DOORS (SLIPING) 10'x10'

CEMENT ROOF (NO INSUL)

WALL DOUBLE BRICK

STEEL FRAME CONSTRUCTION

TRUCK DOOR LEFT OPEN WITH V/H RUNNING

WALLS 3 @ LAYERS BRICK NO AIR SPACE

BUILDING 213

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ. # EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/6/92

BLDG. # 213
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
MEN'S ROOM BAY-5	122°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: CS
CHECKED BY:
DATE: 1-6-92

BLDG.# 213
ECO 5

MOTORS

MOTOR #	10	HP	7.5	PH	3	RPM	1750
MODEL #	6-330771-03	VOLTS	230/460	AMPS	21/10.5		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	GOULD	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	HEATING SUPPLY #2 COMMENTS WINTER ONLY NOT RUNNING						

MOTOR #	13	HP	3.0	PH	3	RPM	3450
MODEL #	8-350378-01	VOLTS	200-230/460	AMPS	9.0-8.6/4.3		
SERIAL #		PRESENT HR.		TO			
MFG	CENTURY	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	CONDENSATE PUMP #1 COMMENTS FLOAT SWITCH						

MOTOR #	14	HP	3	PH	3	RPM	3450
MODEL #	8-350378-01	VOLTS	200-230/460	AMPS	9.0-8.6/4.3		
SERIAL #		PRESENT HR.		TO			
MFG	CENTURY	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	CONDENSATE PUMP #2 COMMENTS FLOAT SWITCH						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1-6-92

BLDG.# 213
ECO 5

MOTORS

MOTOR #	<u>12</u>	HP	<u>10</u>	PH	<u>3</u>	RPM	<u>1745</u>
MODEL #	<u>MK 215TTDR 7026HTW</u>	VOLTS	<u>208-230</u>	AMPS	<u>26.6</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>MARATHON</u>	REQUIRED HR.		TO			
FRAME	<u>215T</u>	EFF.	<u>86.5</u>				
DESCRIPTION	<u>CWP RETURN 2</u>	COMMENTS	<u>SUMMER ONLY</u> <u>* CAN NOT TAKE READING.</u>				

MOTOR #	<u>11</u>	HP	<u>10</u>	PH	<u>3</u>	RPM	<u>1745</u>
MODEL #	<u>MK 215TTDR 7026HTW</u>	VOLTS	<u>208-230</u>	AMPS	<u>26.6</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>MARATHON</u>	REQUIRED HR.		TO			
FRAME	<u>215T</u>	EFF.	<u>86.5</u>				
DESCRIPTION	<u>CWP 1</u>	COMMENTS	<u>SUMMER ONLY</u> <u>* CANNOT TAKE READING.</u>				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: CS
CHECKED BY:
DATE: 1-6-92

BLDG.# 213
ECO 5

MOTORS

MOTOR #	18	HP	3	PH	3	RPM	
MODEL #	BWV180B300BA	VOLTS	200-230	AMPS	9		
SERIAL #		PRESENT HR.		TO			
MFG	American Standard	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	AHU #1	COMMENTS	Room 128				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	AHU	COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: CS
CHECKED BY:
DATE: 1-6-92

BLDG.# 213
ECO 5

MOTORS

MOTOR #	4	HP	2	PH	3	RPM	1740
MODEL #	8-337207-1	VOLTS	208/416	AMPS	7/3.5		
SERIAL #		PRESENT HR.		TO			
MFG	Gould	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	CWP #3	COMMENTS	ONLY IN SUMMER				

MOTOR #	5	HP	15	PH	3	RPM	1755
MODEL #	F-1713-02-234	VOLTS	200	AMPS	49		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	U.S. Electric Motor	REQUIRED HR.	7:30	TO	4:30		
FRAME	254T	EFF.	87.5				
DESCRIPTION	AHU Supply #2	COMMENTS					
KVAR	3.2	KVA	5.5	PF	81.4		
KW	4.5	VOLT AMP	208	205	27.7	26.7	

MOTOR #	6	HP	3/4	PH	1	RPM	1725
MODEL #	M-270A	VOLTS	115	AMPS	10.8		
SERIAL #		PRESENT HR.		TO			
MFG	LELAND-FARRADAY	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	Return #1	COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

DATE:

1-6-92

BLDG.#

213

ECO 5

MOTORS

MOTOR #	<u>1</u>	HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.	<u>0</u>	TO	<u>2400</u>		
MFG	<u>CARRIER</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>AHU - CARRIER #4</u>						
COMMENTS	<u>CANNOT READ NAMEPLATE</u> <u>SECTION 6 SELF CONTAIN WITH COMPRESSOR @ BOTTOM</u>						

MOTOR #	<u>2</u>	HP	<u>0.5</u>	PH	<u>1</u>	RPM	
MODEL #	<u>50EEO24-331-MD2</u>	VOLTS	<u>208/230</u>	AMPS	<u>4.6</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>CARRIER</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>AHU - PAD MOUNT #5</u>						
COMMENTS							

MOTOR #	<u>3</u>	HP	<u>1</u>	PH	<u>3</u>	RPM	<u>1740</u>
MODEL #	<u>3-339206-1</u>	VOLTS	<u>208</u>	AMPS	<u>3.75</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>GOULD</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>HWP #3</u>						
COMMENTS	<u>ONLY IN WINTER</u>						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: CS
CHECKED BY: _____
DATE: 1-6-92

BLDG.# 213
ECO 5

MOTORS

MOTOR #	15	HP	1/12	PH	1	RPM	1725
MODEL #	M09181 1-89	VOLTS	115	AMPS	1.75		
SERIAL #		PRESENT HR.		TO			
MFG	Bell Gossett	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	HWP #1	COMMENTS	Room 128				

MOTOR #	16	HP	1/12	PH		RPM	1725
MODEL #	M09181 1-89	VOLTS	115	AMPS	1.75		
SERIAL #		PRESENT HR.		TO			
MFG	Bell Gossett	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	HWP #2	COMMENTS	Room 128				

MOTOR #	17	HP	2	PH	3	RPM	
MODEL #	BTE120B400GA	VOLTS	200-230	AMPS	6.6		
SERIAL #	#	PRESENT HR.		TO			
MFG	Trane	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	AHU #3	COMMENTS	Room 128				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CS

CHECKED BY:

DATE:

1-6-92

BLDG.#
ECO 5

213

MOTORS

MOTOR #	7	HP	3/4	PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	Return #2	COMMENTS	Could not read				

MOTOR #	8	HP		PH		RPM	
MODEL #		VOLTS	120	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	FCU 1-6	COMMENTS	CEILING MOUNT UNIT T'STAT CONTROL				

MOTOR #	9	HP	7.5	PH	3	RPM	1750
MODEL #	6-330771-03	VOLTS	230/460	AMPS	21/10.5		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	GOULD	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	HEATING SUPPLY #1	COMMENTS	WINTER ONLY RUNNING				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY:
CHECKED BY:
DATE:

BLDG.# 213
ECO 5

MOTORS

MOTOR #	AHU-2	HP	7.5	PH	3	RPM	1750
MODEL #	6-330771-03	VOLTS	230/460	AMPS	21/10.5		
SERIAL #		PRESENT HR.		TO			
MFG	Century	REQUIRED HR.		TO			
FRAME	21T	EFF.	82.9	PF	80.7		
DESCRIPTION	COMMENTS						
MOTOR #	AHU 8	HP	5	PH	3	RPM	1750
MODEL #	6-322465-03	VOLTS	230/460	AMPS	14.4/7.2		
SERIAL #		PRESENT HR.		TO			
MFG	Century	REQUIRED HR.		TO			
FRAME	S184T	EFF.	81.6	PF	79.7		
DESCRIPTION	Fire Range						
MOTOR #	AHU-1	HP	5	PH	3	RPM	1745
MODEL #	EK184AL 217C	VOLTS	230/460	AMPS	14.2/7.1		
SERIAL #		PRESENT HR.		TO			
MFG	GE	REQUIRED HR.		TO			
FRAME	184T	EFF.					
DESCRIPTION	Service factor 1.15						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ. # EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/3/92

BLDG. # 213
ECO 15

LIGHTING

EAL #	ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
7	1	8	2		F	ON		N	1	N
24	2A	4	4		F	ON		N	1	N
24	1B	8	2		F	ON		N	1	N
8	2	3	2		F	ON		Y	1	N
12	3	3	2		F	ON		Y	1	N
11	4	2	4		F	ON		Y	1	N
	5	A								
reception	6	A								
	7	12	4		F	ON		N	2	N
	8	2	4		F	ON		N	1	N
	9	3	4		F	ON		N	1	N
13	10	5	4		F	ON		N	1	X
	11	6	2		F	ON		N	1	N
	12	6	2		F	ON		N	1	N
17	13	6	4		F	ON		N	1	N
21	14	3	4		F	ON		N	1	N
23	15	2	1	40	I	OFF		N	1	N
19	16	1	1	34	F	OFF	Y	Y	1	N.

OF EXIT SIGNS - _____

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/3/92

BLDG.# 213
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
2022	17	18	SAME AS	14-15					
67	19	11	4	F	ON	Y	N	2	N
70	20	2	2	F	ON	Y	N	1	N
77	21	$\frac{4}{9}$	$\frac{1}{1}$	$\frac{150}{34}$ $\frac{I}{F}$	ON	Y	N	1	Y
71	22	2	2	F	ON	Y	N	1	Y
72	23	2	2	F	ON	Y	N Y	1	Y
73	24	2	4	F	ON	Y	Y	1	Y
75	24	8	4	F	ON	Y	N	1	Y
74	26	2	2	F	ON	Y	Y	1	Y
76	27	19	2	F	ON	Y	N	1	Y
PHOTO LAB	28	14	2	F	ON	Y	N	2	N
93	29	4	4	F	OFF		N	1	N
96	30	1	4	F	OFF		N	1	N
97	31	1							
MICRO-PHOTO	32	1	4	F	OFF		N	1	N
98	33	2	4	F	OFF		N	1	N
100	34	16	4	F	ON		N	4	N
35*	1	1	10	I	OFF		N	1	N

OF EXIT SIGNS - _____

COMMENTS: ★ GUN ROOM

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/3/92

BLDG.# 213
ECO 15

LIGHTING

Room	ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
Adm Room	39	1	4		F	ON		N	1	N
HEM MIX	40	2	4		F	ON		N	1	N
91	41	2	4		F	ON		N	1	N
79	42	3	4		F	ON		N	2	N
78	43	4	4		F	ON		N	2	N
108	44	2	4		F	ON		Y	1	N
107	45	2	4		F	OFF		N	1	
106	46	3	4		F	ON		N	1	
106	47	2	4		F	ON		N	1	N
104	48	1				ON		N	1	N
104	49	1				ON		N	1	N
101	50	1	2		F	ON		N	1	N
105	51	2	4		F	ON		Y	1	Y
64	52	20	4		F	ON		N		NO
59	53	5	4		F	OFF		N	1	NO
Fortress Room	54	3	4		F	OFF		N	1	N
Laser Room	55	3	4		F	OFF		N	1	N
Auto Room	56	6	LOW PRESS. SODIUM		I	OFF		N	1	N

OF EXIT SIGNS - _____

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: CS
CHECKED BY: _____
DATE: 1-6-92

BLDG.# 213
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
110	3	4	34	F	ON	Y	N	1	Y
	3	2 ^(u)	40	F	ON	Y	N	1	Y
113	4	2 ^(u)	40	F	OFF	Y	Y	1	N
114	4	2 ^(u)	40	F	ON	Y	Y	1	N
116	4	2 ^(u)	40	F	ON	Y	N	1	N
117	20	4	34	F	ON	Y	N	2	Y
	8	2 ^(u)	40	F	ON	Y	N	2	Y
119	3	2 ^{8'}		F	ON	Y	N	1	N
121	9	4	34	F	ON	Y	N	1	N
122	6	2 ^(u)	40	F	ON	Y	N	1	N
123	21	2 ^{8'}		F	ON	Y	N	5	N
125	2	4	34	F	ON	Y	N	1	Y
	1	2 ^(u)	40	F	OFF	Y	N	1	Y
127	3	4	34	F	ON	Y	N	1	Y
	1	2 ^(u)	40	F	OFF	Y	N	1	Y
128	3	2 ^{8'}		F	OFF	Y	N	1	N
129	5	2 ^{8'}		F	ON	Y	N	6	Y
	12	1	60	I	ON	Y	N	6	Y

OF EXIT SIGNS - _____


COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ. # EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: J W
CHECKED BY: _____
DATE: 1/6/92

BLDG. # 213
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
103	3	4	34	F	ON	Y	Y	1	Y
104	2	4	34	F	ON	Y	Y	1	N
102	4	4		F	ON	Y	N	1	Y
105	2	4		F	ON	Y	Y	1	N
108	12	4		F	ON	Y	N	2	N
109	6	4		F	OFF	Y	N	2	N
110	10	2		F	OFF	Y	N	1	N
112	10	4		F	ON	Y	N	2	N
115	14/2	4/2u	34/2	F	ON	N Y	N	2	N
118	4	2-u		F	ON	Y	Y	1	N
120	9	4	34	F	ON	Y	N	2	N
124	14	4	34	F	ON	Y	N	1	N
126	1	2u		F	OFF	Y	N	1	N
129	32	4	34	F	ON	Y	N		N
									

OF EXIT SIGNS - 2

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: CS

CHECKED BY: _____

DATE: 1/6/92

BLDG.# 213
ECO 15

LIGHTING

ACTUAL
Room

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
58	4	2 ^(u)	34	F	ON	Y	N	1	Y
56 59	4	4	34	F	ON	Y	N	1	N
55 60	2	4	34	F	ON	Y	N	1	N
CLEAN UP 61	2	4	34	F	ON	Y	N	1	Y
52 62	4	4	34	F	ON	Y	N	1	N
52 63	2	4	34	F	ON	Y	N	1	Y
51 64	16 16	4	34	F	ON	Y	N	3	N
65	2	4	34	F	ON	Y	Y	1	Y
66	2	4	34	F	ON	Y	Y	1	N
45 69	2	4	34	F	ON	Y	Y	1	N
48 70 70	4 4	4	34	F	ON	Y	N	2	N
	22	1	20 ^{3'} 20	F	ON	Y	N	2	N
42 74	28	4	34	F	ON	Y	N	1	N
	6	1	30" 30	F	ON	Y	N	1	N
79	4	4	34	F	ON	Y	Y	1	N
27 30 80	13 13	4	34	F	ON	Y	N	2	N
85	2	4	34	F	ON	Y	Y	1	N
86	1	2 ^(u)	34	F	OFF	Y	N	1	N

OF EXIT SIGNS - _____

COMMENTS:

NOTE: BAY 5 HAS 58.8KW LIGHTING

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. OF
CALCULATED BY: CS
CHECKED BY:
DATE: 1-6-92

BLDG.# 213
ECO 15

LIGHTING

	ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
34	88	4	4	34	F	ON	Y	N	1	Y
37	90	6	4	34	F	OFF	Y	N	1	N
38	92	6	4	34	F	ON	Y	Y	1	N
	93	8	4	34						
		2	2	34						
39	93	2	2 ^(u)	34	F	ON	Y	Y	1	Y
	94	235*	2	34	F	ON	Y	N		N
	95	4	4	34	F	ON	Y	Y	1	Y
	96	1	1	60	I	ON	Y	Y	1	Y
	97	5	4	34	F	ON	Y	N	2	Y
	98	7	1	75	I	OFF	Y	N	1	N
	99	12	4	34	F	ON	Y	N	5	N
		1	2 ^(u)	40	F	OFF	Y	N	2	N
	100	1	2 ^(u)	34	F	OFF	Y	N	1	N
	101	1	1	60	I	OFF	Y	N	1	N
	102	4	4	34	F	ON	Y	N	2	Y
	106	10	4	34	F	ON	Y	N	2	N
	107	2	4	34	F	ON	Y	N	1	Y

OF EXIT SIGNS -

COMMENTS: * Half of the possible lights are on
approx. 200 lights off

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ. # EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: JW

CHECKED BY: _____

DATE: 1/3/92

BLDG. # 213
EC0 15

LIGHTING

ACTUAL Room	ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
66	57	2	4	34	F	OFF	Y	N	1	N
46	67	3	4	34	F	ON	Y	N	1	Y
47	68	2	4	34	F	ON	Y	Y	1	Y
	71	2	4		F	ON	Y	N	1	N
	72	2	4		F	OFF	Y	N	1	N
	73	1	4		F	OFF	Y	N	1	N
41	75	14	4		F	ON	Y	N	2	N
39	76	23	4		F	ON	Y	N	2	N
	77	2	4		F	OFF	Y	Y	1	N
32	78	6	4		F	ON	Y	Y	2	Y
26	81	2	4		F	ON	Y	Y	1	Y
25	82	2	4		F	OFF	Y	Y	1	NO
28	83	2	4		F	ON	Y	Y	1	NO
29	84	3	4		F	ON	Y	Y	1	NO
33	87	3	4		F	ON	Y	N	1	N
35	89	2	4		F	OFF	Y	Y	1	N
	90	5	4		F	ON	Y	N	1	N
36	91	2	4		F	OFF	Y	Y	1	N

OF EXIT SIGNS - _____

COMMENTS: _____

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Bldg 213

Air Comp

7.5 HP 3 ϕ 1730 Rpm

Model # BL-75-18-213T WEG - Brazil

230/460V 20/10 Amps

eff —

Heat Pump

Carrier Tech 2000

Model #: 38YHC24300

230V 1 ϕ 60 Hz 13.7 RLA 61 LRA - compressor

230V 1 ϕ 9 FLA - Fan

Heat Pump 2

Hussmann 208V

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Plg 213

- 1 Air Handler - Inst Room
- 2 Air Handler - Chemistry Drr
- 3 Air Handler - Serology
- 4 Air Handler - Latent Prints
- 5 Air Handler - Supply - Section Front of Building
- 6) Air Handler - Photo Rooms
- ✓ 7 Air Handler - Questions + Documents
- 8) Air Handler - Fire Arms

Hot Water Chilled water ^{draw} ~~BT~~ through
single zone

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

C10 BLDG # 213

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/30/92

CHECKED BY _____ DATE _____

SCALE _____

MOTORS

AHU #3

GOULD - CENTURY MOTORS

PART # 6-322465-03

FM # 5184T TYPE: SC

1745 RPM

5 HP

60 Hz, 3 ϕ

14.4 / 7.2 Amp

~~400V~~ 230/460V

AHU #4 GOULD 5 HP

PART # 6-322465-03

AHU #6 & 7

SAME

AHU #5 ~~INACCESSIBLE~~ INACCESSIBLE MOTOR

APPROX 5 HP

NOTE: UNIT HAS A SEVERE LEAK PROBLEM ORIGINATING FROM CHW PNEUMATIC VALVE. HAS BEEN LEAKING FOR SOME TIME BECAUSE PIPE IS RUSTING BADLY ON OUTSIDE.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 213

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/6/92

CHECKED BY _____ DATE _____

SCALE _____

BAY 4 CHILLER (SOUTH)

TSI (TECHNICAL SYSTEMS, INCORPORATED)

R-22 S#8775 M#CAZCM12

~~4~~ 460V 60Hz 3 ϕ

4 COMPRESSORS AT 67.5 RLA	283 LRA
44.3	214
67.5	283
44.3	214

12 FANS AT 1HP each

2.3 FLA

SOUTH END BOILER ROOM:

CONDENSATE TANK SHOULD BE INSULATED.

APPROX 5' DIA. X 10' LONG

RM 128 MECH ROOM:

HW PIPES NEED TO BE INSULATED. 2" PIPE

BAY 2, COMPUTER STORAGE ROOM HAS INADEQUATE LIGHTING. THE OCCUPIERS HAVE INSTALLED THEIR OWN FLOURESCENT LIGHTS & THE OLD INCANDESCENT LIGHTS ARE A SAFETY HAZZARD BECAUSE OLD ~~LIGHTING~~ WIRE.

BUILDING 214

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ. #

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CS

CHECKED BY:

DATE:

1-9-92

BLDG. # 214
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
MEN'S BATHROOM SOUTH	139°F
BREAK ROOM (Mid. of Bldg.)	130 130°F
VEGETABLE CLEANING RM	146°F
PROBLEMS:	

COMMENTS:

BREAK ROOM IS FAR FROM HEATER BECAUSE
HOT WATER TOOK TWO MINUTES TO REACH
THE BREAK ROOM.

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CC

CHECKED BY:

DATE:

1-9-92

BLDG.#
ECO 5

214 G

MOTORS

MOTOR #	3	HP	1/6	PH	1	RPM	1725
MODEL #	M10293 183	VOLTS	115 V	AMPS	2.4		
SERIAL #		PRESENT HR.		TO			
MFG	B G	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	DHW CIRC. PUMP.		COMMENTS PRESSURE CONTROL.				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION			COMMENTS				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION			COMMENTS				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KEC

CHECKED BY:

DATE:

1-9-92

BLDG.#
ECO 5

214 G

10+ HP MOTORS

MEASURED

MOTOR#	1	PHASE A	PHASE B	PHASE C
DESCRIPTION	HWP	472	471	
MFG	US ELECTRIC MOTORS	16	14.3	
MODEL #	B046/N09N19/R0375	7.3		
SERIAL #		12.4		
FRAME	254JP	10		
HP	15	80.7		
RPM	1765			
VOLT	230 / 460			
AMPS	39.2 / 19.6	PRESENT	0 TO 2400	
EFF.	89.5	REQ HR.	TO	
COMMENTS	HW PUMP.			

MOTOR#	2	PHASE A	PHASE B	PHASE C
DESCRIPTION	AHV	474	475	
MFG	CENTURY	25.9	25.7	
MODEL #	6313482-02	15.6		
SERIAL #		22.1		
FRAME	324T	14.9		
HP	40	69.5		
RPM	1765			
VOLT	460			
AMPS	49	PRESENT	0 TO 2400	
EFF.	89.3	REQ HR.	TO	
COMMENTS	AHV HW / DX			

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

PROJ. #

SHEET NO.

CALCULATED BY:

CHECKED BY:

DATE:

Ft. McPherson/Ft. Gillem Energy Study

EMC # 3105.000

OF

BLDG. #

ECO 10

2146

KC

1-9-92

AIR STRATIFICATION

LOCATION

BAY 7

REQ. TEMP.

TEMP. AT TSTAT

SOURCE

UH

TEMP. AT CEILING

73.7°F

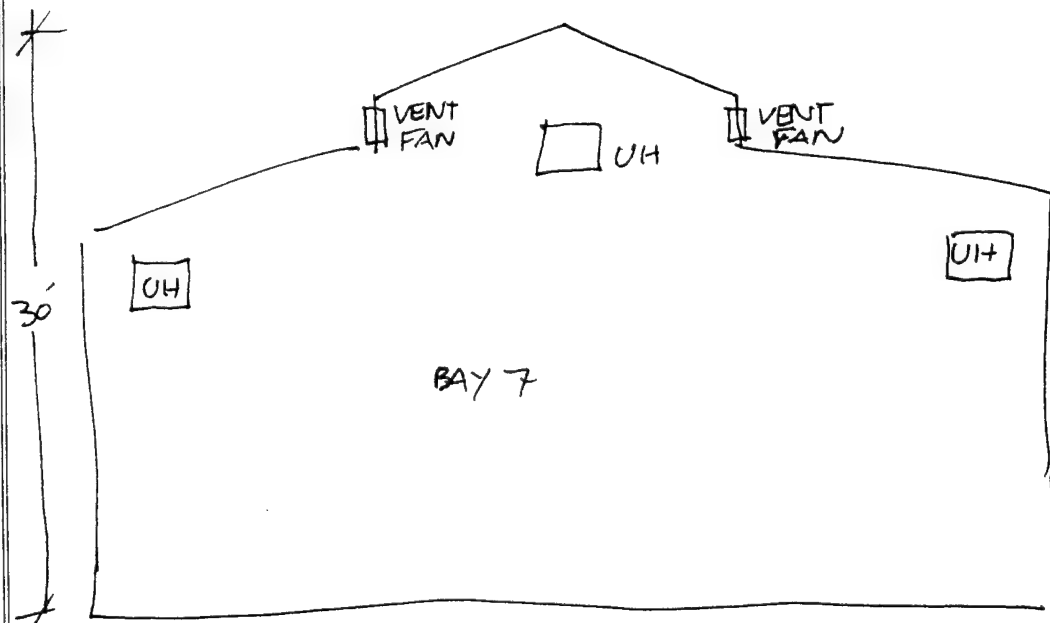
OPP. HOURS

0700 TO 2400

TEMP. AT FLOOR

70.3°F

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ. #
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE:

Ft. McPherson/Ft. Gillem Energy Study

EMC # 3105.000

OF

KC

1-9-92

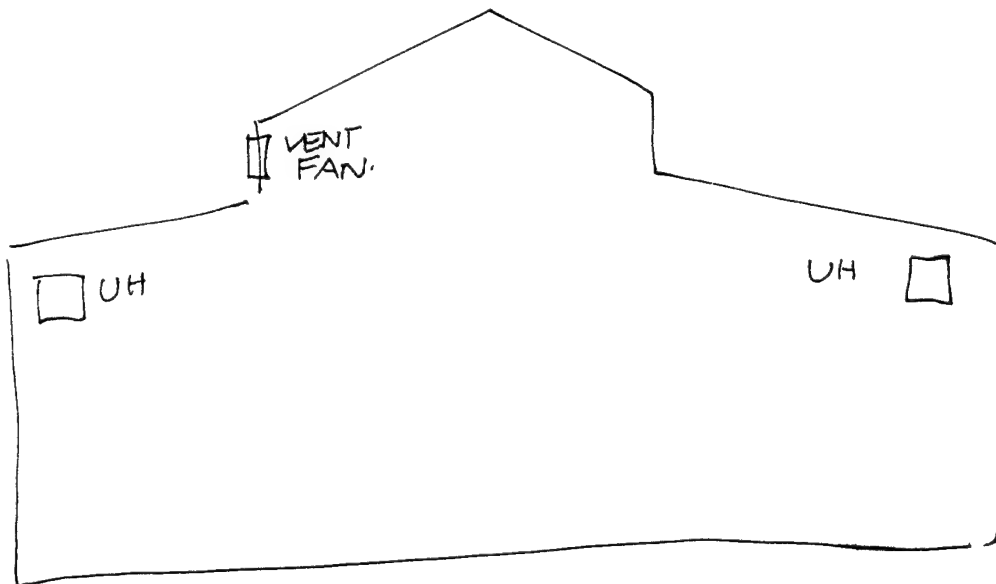
BLDG. #
ECO 10

214 G

AIR STRATIFICATION

LOCATION	BAY G	REQ. TEMP.	
TEMP. AT TSTAT		SOURCE	UH
TEMP. AT CEILING	75 F	OPP. HOURS	0700 TO 12400
TEMP. AT FLOOR	72.3 F		

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

PROJ. #

SHEET NO.

CALCULATED BY:

CHECKED BY:

DATE:

Ft. McPherson/Ft. Gillem Energy Study

EMC # 3105.000

OF

KE

1-9-92

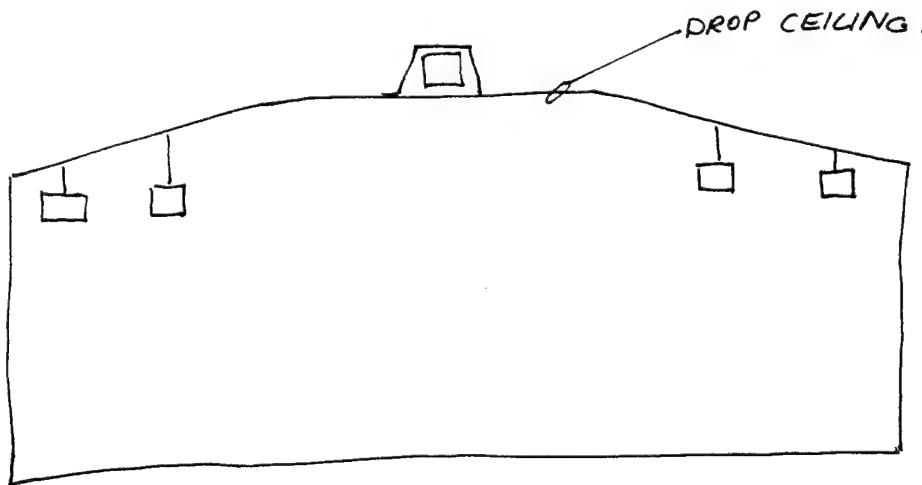
BLDG.#
ECO 10

2146

AIR STRATIFICATION

LOCATION	BAY 4	REQ. TEMP.	
TEMP. AT TSTAT		SOURCE	UH (HW COIL)
TEMP. AT CEILING	70.7	OPP. HOURS	TO
TEMP. AT FLOOR	70.1	T' STAT CONTROL	

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS: UH5 BLOW DOWN

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 214G.

JOB _____

SHEET NO. _____

OF _____

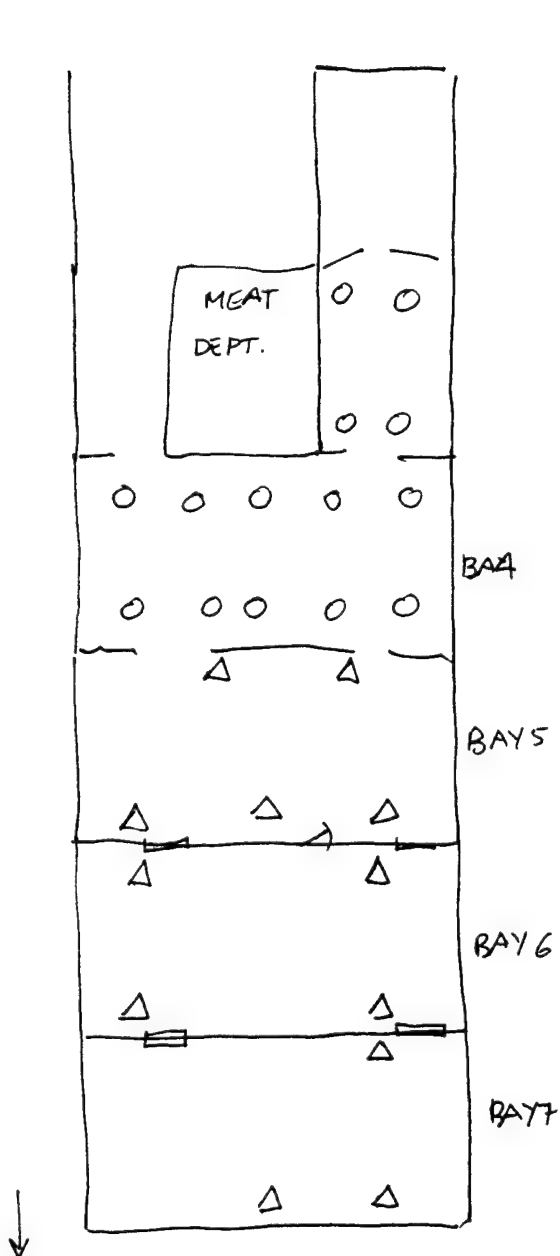
CALCULATED BY _____

DATE _____

CHECKED BY _____

DATE _____

SCALE _____



O - UH. HW COIL

Δ - GAS FIRED UH.

TRANE

MOD. # GPNCO2ZADB10000

INPUT 225,000 BTU/H

OUTPUT 173,250 BTU/H

275 W

THERMAL EFF. 77%.

FAN (1)

SHELLER-GLOBE CORP.

MOD. # H001A4456E 1140 RPM

115V AA 1Ø 1/4 HP

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 214

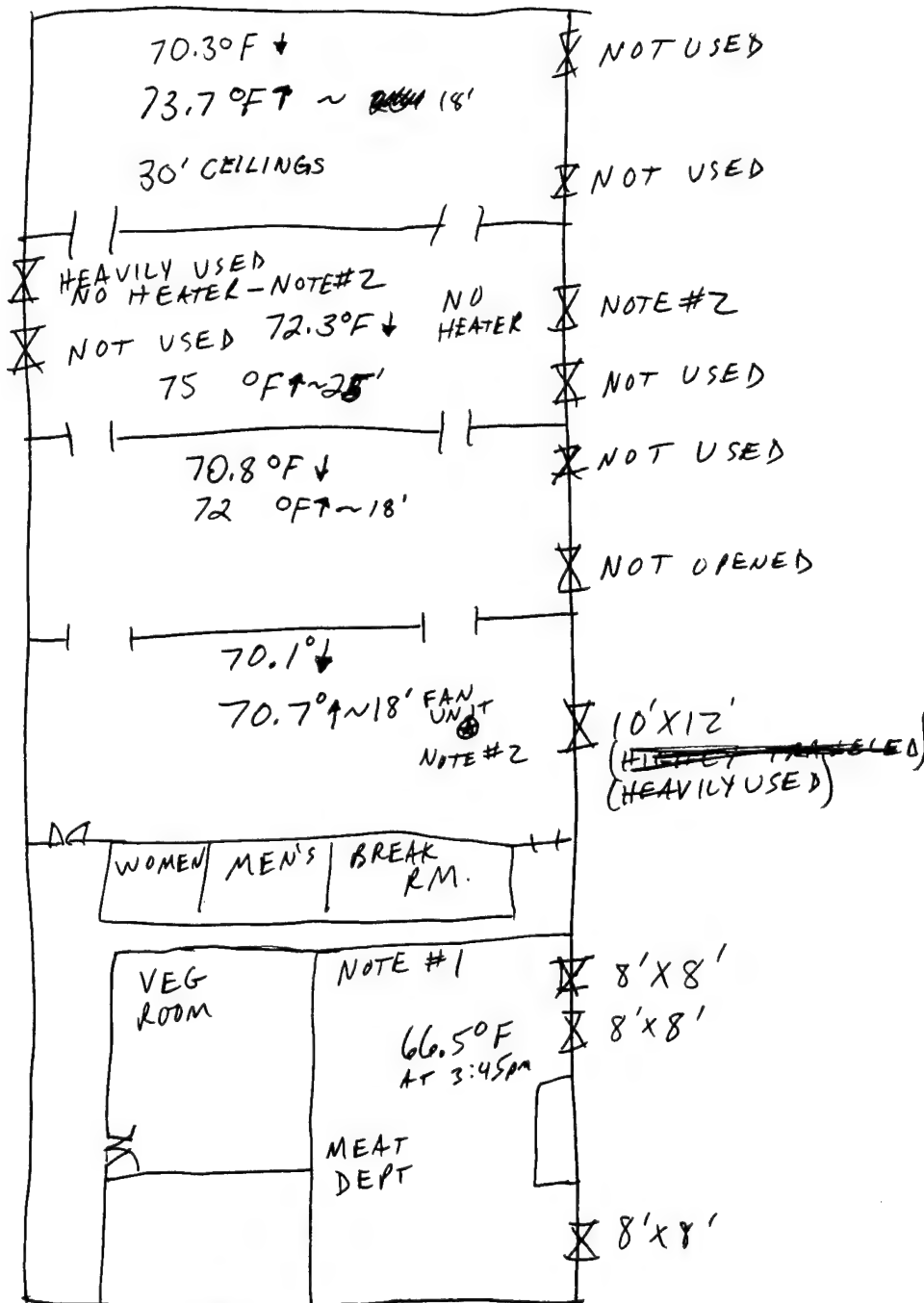
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/9/92

CHECKED BY _____ DATE _____

SCALE _____



COMMISSARY ↓ ↑ WAREHOUSE

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 214

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/9/92

CHECKED BY _____ DATE _____

SCALE _____

NOTES

- 1) ALL MEAT DEPT. DOORS ARE OPEN FROM 7:00 - 12:00 ON THURS. & ~~FRIDAY~~ WEDNESDAY. GOOD PLACE FOR INFRARED HEATERS IN FRONT OF 3 BAY DOORS.
- 2) NEEDS INFRARED HEATER

BUILDING 308

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ.#
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE:

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000
OF
JW
1/7/92

BLDG.# 308
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
MEN'S RM. NORTH	140°F
MEN'S RM. S.E.	131°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

RC

CHECKED BY:

DATE:

1-8-92

BLDG.#

308 G

ECO 5

MOTORS

MOTOR #	4	HP	1/12	PH	1	RPM	1725
MODEL #	MØ91812-87	VOLTS	115	AMPS	1.75		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	BØ	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

MOTOR #	5	HP	2	PH	3	RPM	
MODEL #	40ØRØ1230	VOLTS	230	AMPS	6.2		
SERIAL #	C693171	PRESENT HR.		TO			
MFG	CARRIER	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	AHV 2	COMMENTS	T'STAT				

MOTOR #	6	HP	3/4	PH	1	RPM	
MODEL #	40VØØØ6300	VOLTS	230	AMPS	5.5		
SERIAL #	G483578	PRESENT HR.		TO			
MFG	CARRIER	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	AHV 3	COMMENTS					
	NEXT TO AHV 2						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1-8-92

BLDG.# 308 G
ECO 5 WAREHOUSE

MOTORS

MOTOR #	1	HP	1/3	PH	1	RPM	1140
MODEL #	5K442C	VOLTS	115	AMPS	8		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	DAYTON	REQUIRED HR.	7:00	TO	3:45		
FRAME		EFF.					
DESCRIPTION	FUEL OIL PUMP	COMMENTS					

MOTOR #	2	HP	3	PH	3	RPM	3450
MODEL #	1303172102	VOLTS	208	AMPS	8.2		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	FRANKLIN ELEC.	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	COND. PUMP(2)	COMMENTS					

MOTOR #	3	HP	3	PH	3	RPM	1750
MODEL #	6-342912-12	VOLTS	200 230	AMPS	9.6 10.1		
SERIAL #		PRESENT HR.		TO			
MFG	CENTURY CARRIER	REQUIRED HR.		TO			
FRAME	S182T	EFF.					
DESCRIPTION	AHV DX	COMMENTS					

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

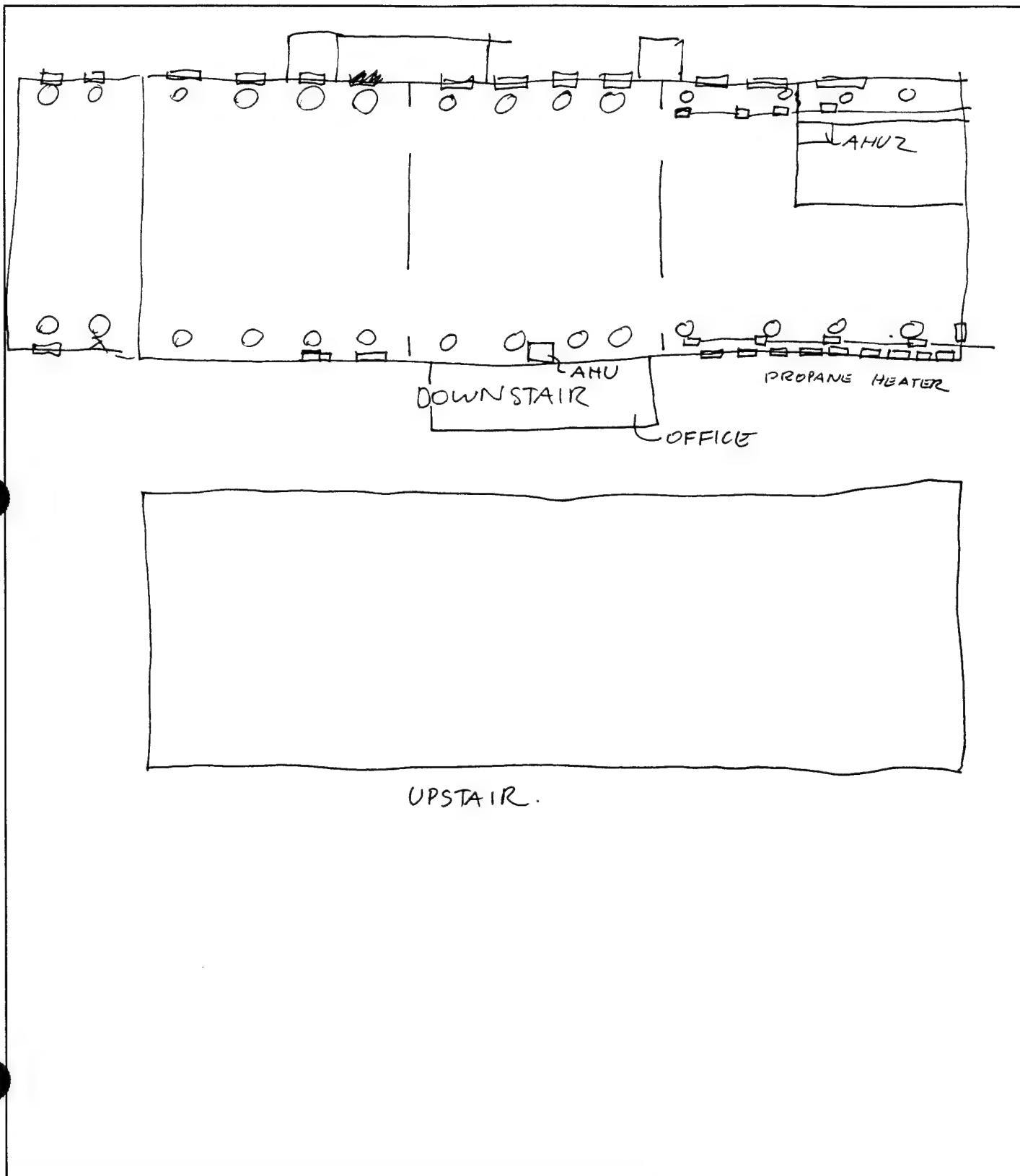
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-8-92

CHECKED BY _____ DATE _____

SCALE _____



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 308 G

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-8-92

CHECKED BY _____ DATE _____

SCALE _____

NEED INSULATE HW PIPE 2" \approx 20'

BUILDING 400

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ. #
SHEET NO. OF
CALCULATED BY: JW
CHECKED BY:
DATE: 1/7/92

BLDG. # 400
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
NORTH EAST MEN'S LOCKER RM. SHOWER	96°F
PAINT ROOM (NORTH WEST) SINK	91.5°F
SOUTH WEST WALL SINK	103.5°F
SOUTH EAST WALL SINK	110°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1-8-92

BLDG.# 400 G
ECO 5

MOTORS

MOTOR #	<u>4</u>	HP	<u>1 1/2</u>	PH	<u>3</u>	RPM	<u>1620</u>
MODEL #	<u></u>	VOLTS	<u>208</u>	AMPS	<u>5.1</u>		
SERIAL #	<u>ZC-11888</u>	PRESENT HR.	<u></u>	TO	<u></u>		
MFG	<u>MASTER</u>	REQUIRED HR.	<u></u>	TO	<u></u>		
FRAME	<u>4710RC</u>	EFF.	<u></u>				
DESCRIPTION	<u>HANGER DOOR ¹⁺² MOTORS (2) COMMENTS APPROXIMATE 20 TIMES/DAY</u>						
MOTOR #	<u>5</u>	HP	<u>1/4</u>	PH	<u>1</u>	RPM	<u>1725</u>
MODEL #	<u>5K5478</u>	VOLTS	<u>115</u>	AMPS	<u>4.9</u>		
SERIAL #	<u></u>	PRESENT HR.	<u></u>	TO	<u></u>		
MFG	<u>DAYTON</u>	REQUIRED HR.	<u></u>	TO	<u></u>		
FRAME	<u></u>	EFF.	<u></u>				
DESCRIPTION	<u>EXH. FAN IN ELEC. SHOP COMMENTS ON/OFF SWITCH. (NEVER RUN)</u>						
MOTOR #	<u>6</u>	HP	<u>1/12</u>	PH	<u></u>	RPM	<u></u>
MODEL #	<u></u>	VOLTS	<u>115</u>	AMPS	<u></u>		
SERIAL #	<u></u>	PRESENT HR.	<u></u>	TO	<u></u>		
MFG	<u>TRANE</u>	REQUIRED HR.	<u></u>	TO	<u></u>		
FRAME	<u></u>	EFF.	<u></u>				
DESCRIPTION	<u>UNIT HEATER 3, 4 COMMENTS T' STAT CONTROL - STM COIL</u>						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1-8-92

BLDG.# 400 (GILLEM)
ECO 5

MOTORS

MOTOR #	1	HP	5	PH	3	RPM	1750
MODEL #	3K132AX20446X	VOLTS	200-230	AMPS	9-8.8		
SERIAL #		PRESENT HR.		TO			
MFG	GE	REQUIRED HR.		TO			
FRAME	182T	EFF.	84				
DESCRIPTION	#2 AHU UPSTAIR IN DOL HEAT @ 70°F COOL @ 80°F						
COMMENTS	T' STAT CONTROL						

MOTOR #	2	HP	1/2	PH	1	RPM	
MODEL #		VOLTS	115	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	UH #1 MEN ROOM						
COMMENTS	STM COIL						

MOTOR #	3	HP	1/4	PH		RPM	
MODEL #		VOLTS	115 V	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG	BEACON MORRIS	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	UH #2 MEN ROOM						
COMMENTS	STM COIL						

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KL
CHECKED BY:
DATE: 1-8-92

BLDG.# 400 G
ECO 5

MOTORS

MOTOR #	<u>7</u>	HP	<u>10</u>	PH	<u>3</u>	RPM	<u>1735</u>
MODEL #	<u>SC-324-JA3-3</u>	VOLTS	<u>220</u>	AMPS	<u>26</u>		
SERIAL #	<u>10AF39516</u>	PRESENT HR.	<u>0</u>	TO	<u>2400</u>		
MFG	<u>CENTURY</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>#1 AHU OVER BODYSHOP</u>		COMMENTS <u>VERY OLD</u>				
	<u>HEATING ONLY STM.</u>		<u>SEE 10HP MOTOR FORM.</u>				

MOTOR #	<u>8</u>	HP	<u>2</u>	PH	<u>3</u>	RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>EXH. FAN #2</u>		COMMENTS <u>CAN NOT GET UP THERE</u>				
			<u>"OLD"</u>				

MOTOR #	<u>9</u>	HP	<u>7.5</u>	PH	<u>3</u>	RPM	<u>3500</u>
MODEL #	<u>G-357330-40</u>	VOLTS	<u>200</u>	AMPS	<u>21</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>CENTURY</u>	REQUIRED HR.		TO			
FRAME	<u>M184T</u>	EFF.	<u>85.5</u>				
DESCRIPTION	<u>COND. POMP. (2) H2</u>		COMMENTS <u>FLOAT SWITCHES</u>				
			<u>RUN FOR 3 MIN. EVERY 4 MIN.</u>				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KL

CHECKED BY:

DATE:

1-8-92

BLDG.#

400 G

ECO 5

MOTORS

MOTOR #	10	HP	1/2	PH		RPM	
MODEL #		VOLTS	115V	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG	BELL & GOSSETT	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	HW CIRC. PUMP	COMMENTS	NO NAME PLATE				

MOTOR #	11	HP	3	PH	3	RPM	1150
MODEL #	115938/A	VOLTS	220	AMPS	8.4		
SERIAL #		PRESENT HR.		TO			
MFG	WESTINGHOUSE	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	1+2 CIRC. FAN UPSTAIR (2)	COMMENTS	MANUAL S/S SW. NOT RUNNING.				

MOTOR #		HP	1/12	PH		RPM	
MODEL #		VOLTS	115V	AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	344 CIRC. FAN DOWNSTAIR (2)	COMMENTS	NO NAME PLATE				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: KL
CHECKED BY: _____
DATE: 1-8-92

BLDG.# 400 G
ECO 5

10+ HP MOTORS

MEASURED

MOTOR#		PHASE A	PHASE B	PHASE C
DESCRIPTION	<u>AHU UPSTAIR</u>	<u>206</u>	<u>203</u>	
MFG	<u>CENTURY</u>	<u>21</u>	<u>20.6</u>	
MODEL #	<u>SC-324-JA3-3</u>	<u>.1</u>		
SERIAL #	<u>10AF39516</u>	<u>4.3</u>		
FRAME		<u>4.2</u>		
HP	<u>10</u> RPM <u>1735</u>	<u>100%</u>		
VOLT	<u>220</u>			
AMPS	<u>26</u>	PRESENT	<u>0 TO 2400</u>	
EFF.		REQ HR.	<u>700 TO 1600</u>	
COMMENTS				

MOTOR#		PHASE A	PHASE B	PHASE C
DESCRIPTION				
MFG				
MODEL #				
SERIAL #				
FRAME				
HP				
VOLT				
AMPS		PRESENT	<u>TO</u>	
EFF.		REQ HR.	<u>TO</u>	
COMMENTS				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

PROJ. #

SHEET NO.

CALCULATED BY:

CHECKED BY:

DATE:

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

OF

BLDG. #

ECO 10

400 G

AIR STRATIFICATION

LOCATION

ABOUT MIDDLE OF BLDG

REQ. TEMP.

TEMP. AT TSTAT

SOURCE

UH

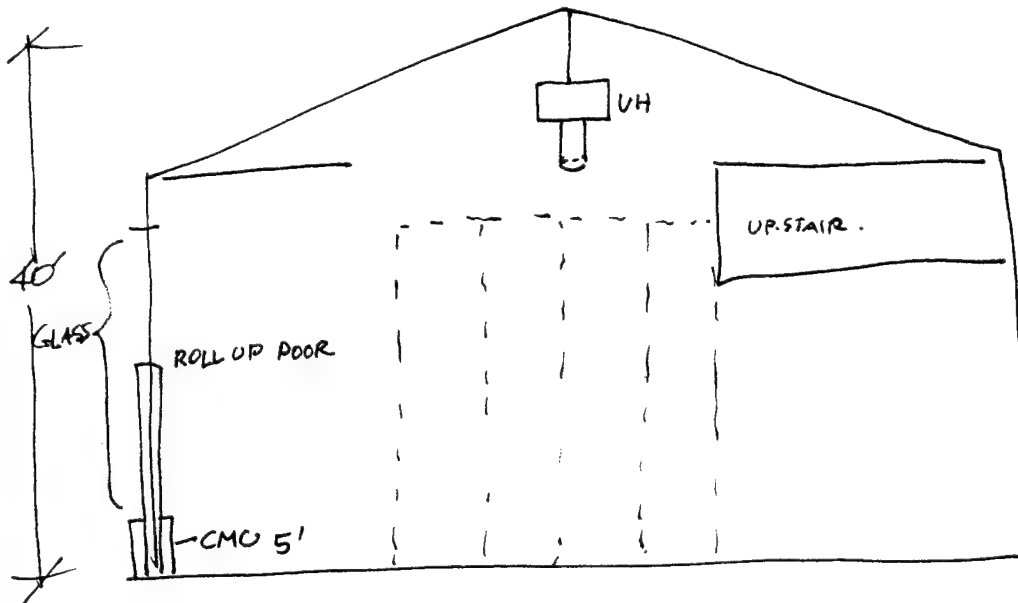
TEMP. AT CEILING 74.1°F

OPP. HOURS

TO

TEMP. AT FLOOR 68°F

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

NO MAJOR ~~HEAT~~ HEAT PROBLEM. 2 BIG SLIDING DOORS @ BOTH
END OF BLDG. ROLL UP DOOR ON SID OF BLDG

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: CS
CHECKED BY: _____
DATE: 1-8-92

BLDG.# 400
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
1	51	2	34	F	ON	Y	N	6	N
2	6	2	34	F	ON	Y	Y	Circuit Breaker	Y
3	6	2	34	F	ON	Y	Y	11	Y
4	3	4	34	F	OFF	Y	Y	1	N
5	1	2	34	F	ON	Y	N	1	Y
6	1	2	34	F	ON	Y	N	1	Y
7	2	1	34	F	OFF	Y	N	1	N
8	2	2	34	F	ON	Y	N	2	Y
9	24	2 ^{5'}	80 ^{Bigger tubes}	F	ON		N	3	N
10	15	2 ^{8'}		F	ON	Y	N	2	N
11	2	2 ^{8'}		F	ON	Y	Y	1	Y
12	4	2 ^{8'}		F	ON	Y	N	1	Y
13	36 4	2 ^{8'}		F	ON	Y	N	1	Y
14	36	1	250 High pressure	each	ON	Y	N	5	N
15	16	2 ⁴⁰	40	F	ON	Y	N	3	Y
16	11	2 ^{5'}	90	F	ON	Y	N	3	Y
17	25	1	150	I	ON	Y	N	2	N
18	6	2	34	F	ON	Y	N	1	N

OF EXIT SIGNS - 11

COMMENTS:

27 burned
out
tubes)

16

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
 PROJ. # EMC # 3105.000
 SHEET NO. _____ OF _____
 CALCULATED BY: CS
 CHECKED BY: _____
 DATE: 1-8-91

BLDG.# 400
EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS -

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: CS
CHECKED BY: _____
DATE: 1-8-92

BLDG.# 400
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
19	5	2 ^{8'}		F	ON	Y	N	1	N
17	18	2 ^{8'}		F	ON	Y	N	2	N
	4	2 ^{5'}	90	F	ON	Y	N	2	N
20	1	2 ^{8'}		F	ON	Y	Y	1/2	Y
	1	2	34	F	ON	Y	N	1/2	Y
21	2	4	34	F	ON	Y	Y	1	N
22	2	2	34	F	OFF	Y	N	1	N
23	2	2	34	F	ON	Y	N	1	Y
24	4	2	34	F	OFF	Y	Y	1	N N
25	1	2 ^{5'}	90	F	OFF	Y	N	1	N
	1	2	34	F	OFF	Y	N	1	N
26	20	2 2 ⁴⁰	34 40	F	ON	Y	N	3	Y
27	64	2 2 ⁴⁰	34 40	F	ON	Y	N	8	N
28	15	2	34	F	OFF	Y	N	2	N
29	65	2	34	F	OFF	Y	N	9	N
	51	1	200	I	OFF	Y	N	1	N
30	34	2	34 40	F	ON	Y	N	2	Y
12	2	1	200	I	OFF	Y	N	1	N

OF EXIT SIGNS - _____

COMMENTS: _____

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

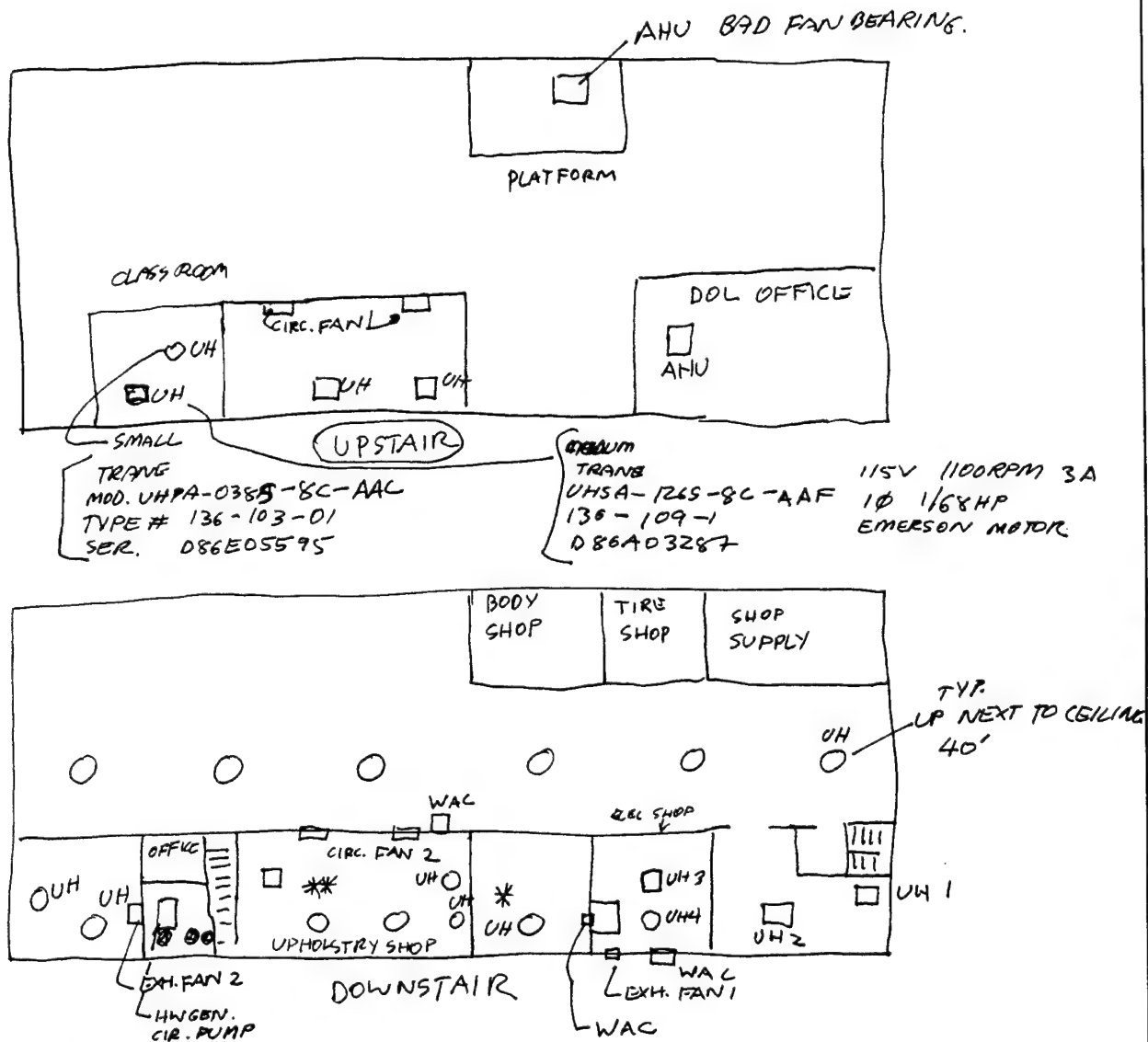
SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-8-72

CHECKED BY _____ DATE _____

SCALE _____

BLDG 400 G



* BULBS BURN OUT NO REPLACEMENT OLD FIXTURE, 4' FLOR. BIGGER DIA. THAN ORDINARY.
250% OUT.

** UPHOLSTERY SHOP COLD DRAFT UM NOT ABLE TO KEEP UP

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 400

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/7/92

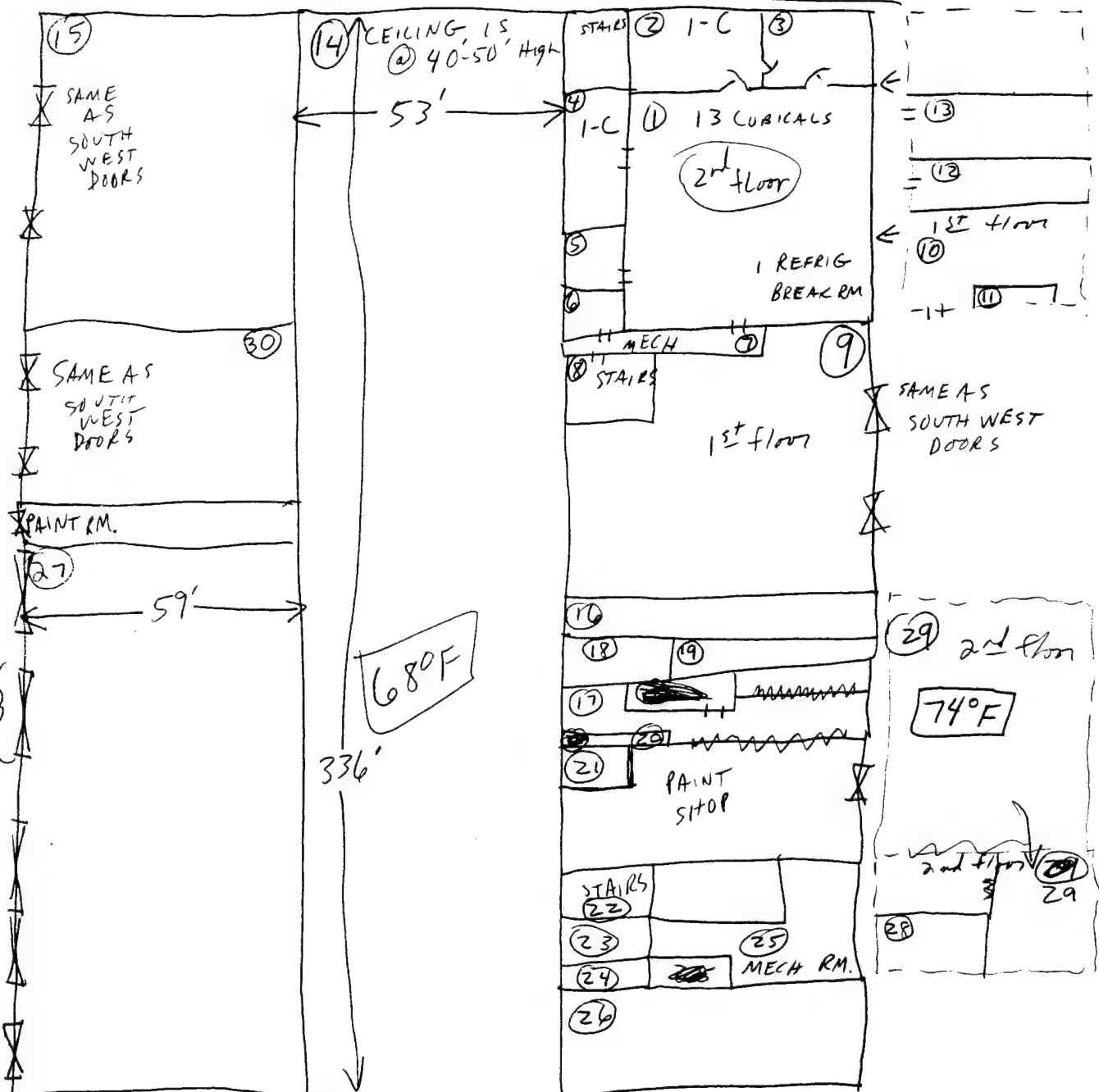
CHECKED BY _____ DATE _____

SCALE _____

C = COMPUTER

A
N

24
14
96
24
336



PAGE 2

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG. 400G

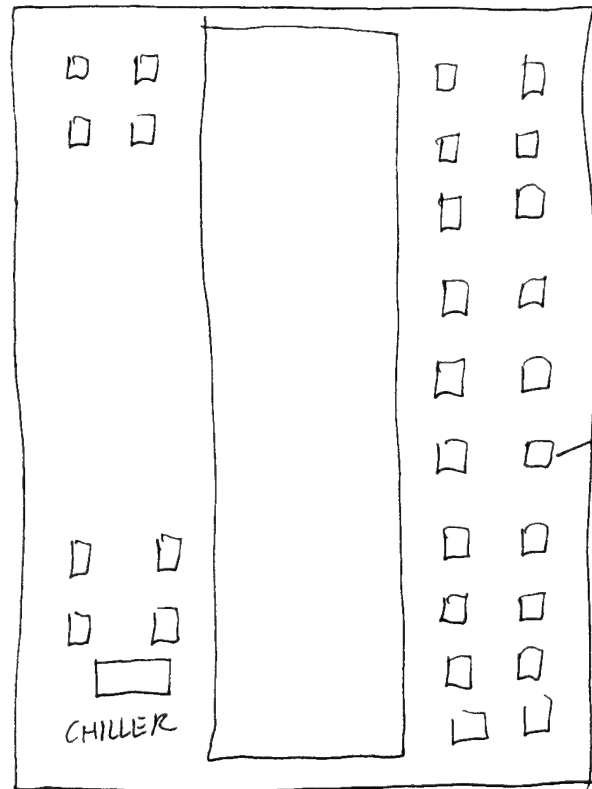
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-8-92

CHECKED BY _____ DATE _____

SCALE _____

TOP VIEWTYP.
EVAP. COOLER

[EVAP. COOLER

PHOENIX MANUFACTURE INC.

P.O. BOX 20663

PHOENIX, AZ 85036

MOD. # DM4400 1/4 HP 115V 6.9A 60HZ

DM4800 1/4 HP 115V 8.8A 60HZ

[CHILLER (DX)

TRANE

MOD# BTA1500500MA

SER# S28198720

COMP. (2) 27 A 200V 3Ø

COND. (4) 3.8 A 200V 1Ø

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 400

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/8/92

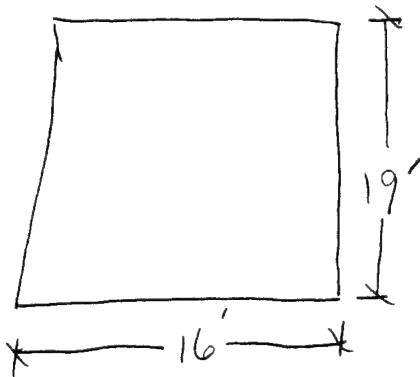
CHECKED BY _____ DATE _____

SCALE _____

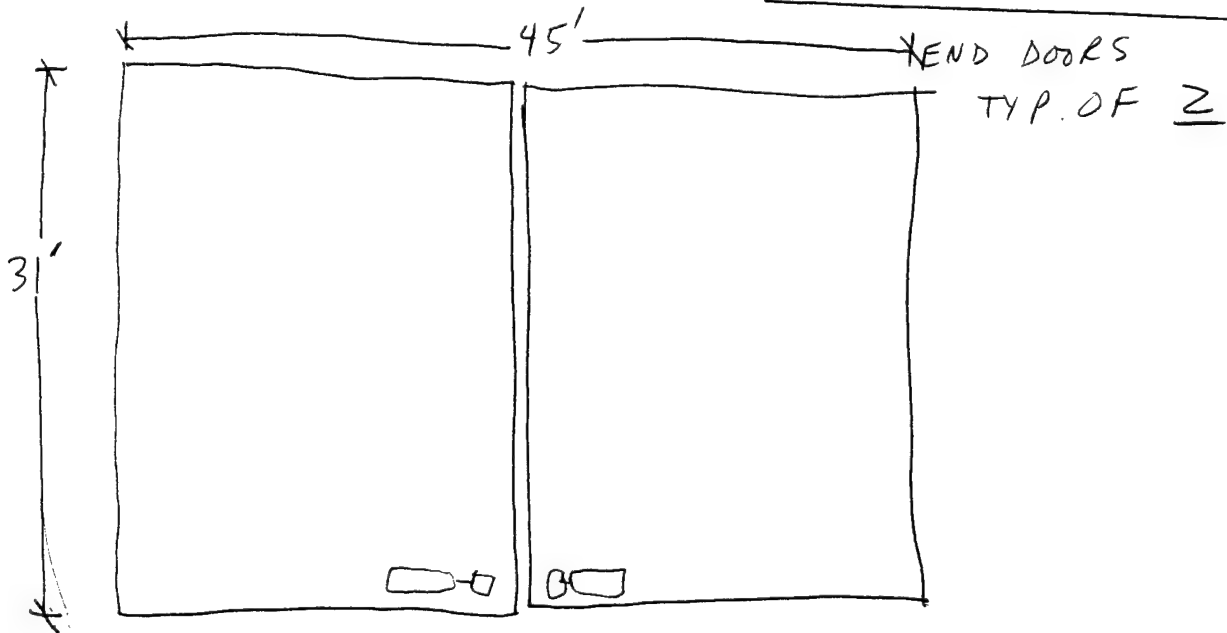
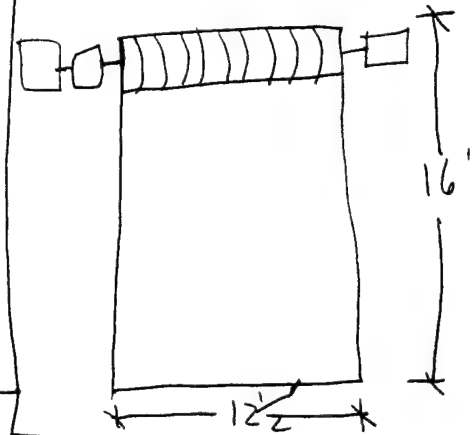
PAGE 2

WEST WALL

BAY DOORS \Rightarrow TYP. OF _____



SOUTH EAST BAY
DOOR (1)



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 400

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/7/92

CHECKED BY _____ DATE _____

SCALE _____

ECO-14

HEATING SUPPLY SOURCE:

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 400

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/8/92

CHECKED BY _____ DATE _____

SCALE _____

BAY DOOR IN FURNITURE SHOP \Rightarrow 12' x 16'
THIS DOOR IS BROKEN & MUST BE PROPPED OPEN IN SUMMER
FOR VENTILATION. NEEDS TO BE REPLACED.

BUILDING 401

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ. #
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE:

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000
OF
CS
1-8-92

BLDG.# 401
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
Bathroom in office downstairs	No hot water 76°F
Showers upstairs	108°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

DATE:

1-8-92

BLDG.#
ECO 5

4016

MOTORS

MOTOR #	1	HP	1/2	PH	3	RPM	1740
MODEL #	6N 145TDR 7342AA	VOLTS	208	AMPS	55		
SERIAL #		PRESENT HR.	7:00	TO	1530		
MFG	MARATHON	REQUIRED HR.		TO			
FRAME	145TCV	EFF.					
DESCRIPTION	COND. PUMP (2)	COMMENTS	FLOAT SWITCH				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ.#

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

DATE:

1-8-92

BLDG.#
ECO 10

401

AIR STRATIFICATION

LOCATION

SHOP

REQ. TEMP.

TEMP. AT TSTAT

SOURCE

UH

TEMP. AT CEILING

75°F

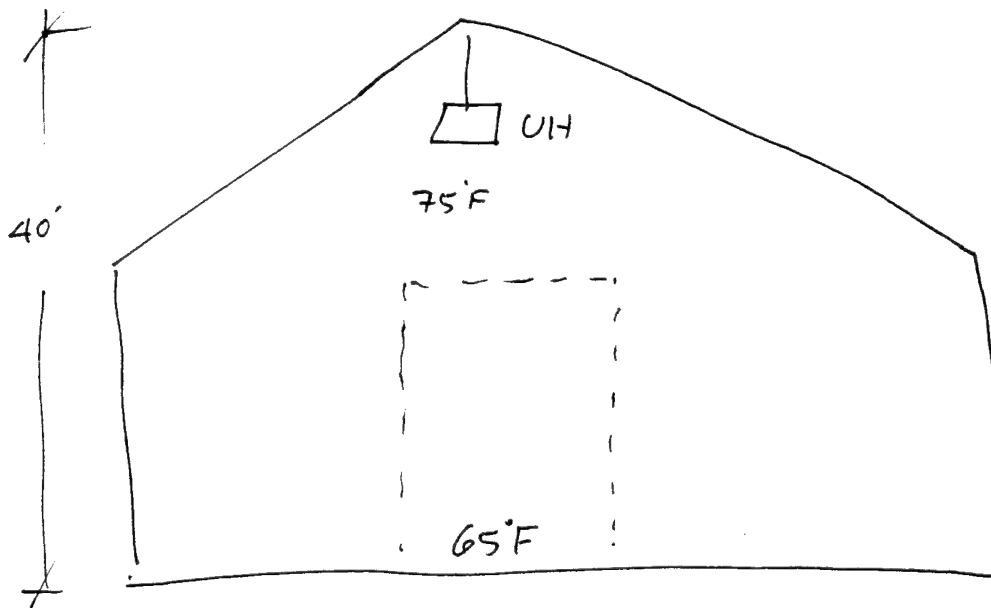
OPP. HOURS

7:00 TO 1530

TEMP. AT FLOOR

65°F

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS:

THE OVERHEAD DOOR IS OPEN DURING SURVEY

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB: Ft. McPherson/Ft. Gillem Energy Study
PROJ.#: EMC # 3105.000
SHEET NO.: _____ OF _____
CALCULATED BY: CS
CHECKED BY: _____
DATE: 1-8-92

BLDG.# 401
EC0 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
1	11	2	34	F	ON	Y	N	3	N
	1	2 ^{8'}		F	ON	Y	N		N
2	2	1	100	I	OFF	Y	N	2	N
3	1	1	100	I	OFF	Y	N	1	N
4	26	1	Low press. sod.		ON	Y	N	8	N
	24	1	200	I	ON	Y	N	59	N
5	8	2	34	F	ON	Y	N	13	Y
6	3	1	75	I	ON	Y	N	2	Y
7	4	1	75	I	ON	Y	N	1	N
8	2	1	100	I	ON	Y	N	1	Y
9	6	1	100	I	ON	Y	N	1	N
10	4	1	100	I	OFF	Y	N	1	N
11	4	1	75	I	OFF	Y	N	1	N
12	6	2	34	F	ON	Y	N	1	Y
13	14	2 ^{8'}		F	ON	Y	N	3	N
14	38	2	34	F	ON	Y	N	4	N
	612	1	100	I	OFF	Do not use			N
15	38	2	34	F	OFF	Y	N	4	N

OF EXIT SIGNS - _____

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB	Ft. McPherson/Ft. Gillem Energy Study	
PROJ.#	EMC # 3105.000	
SHEET NO.		OF
CALCULATED BY:	CS	
CHECKED BY:		
DATE:	1-8-92	

BLDG.# 401
EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS -

COMMENTS: _____

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

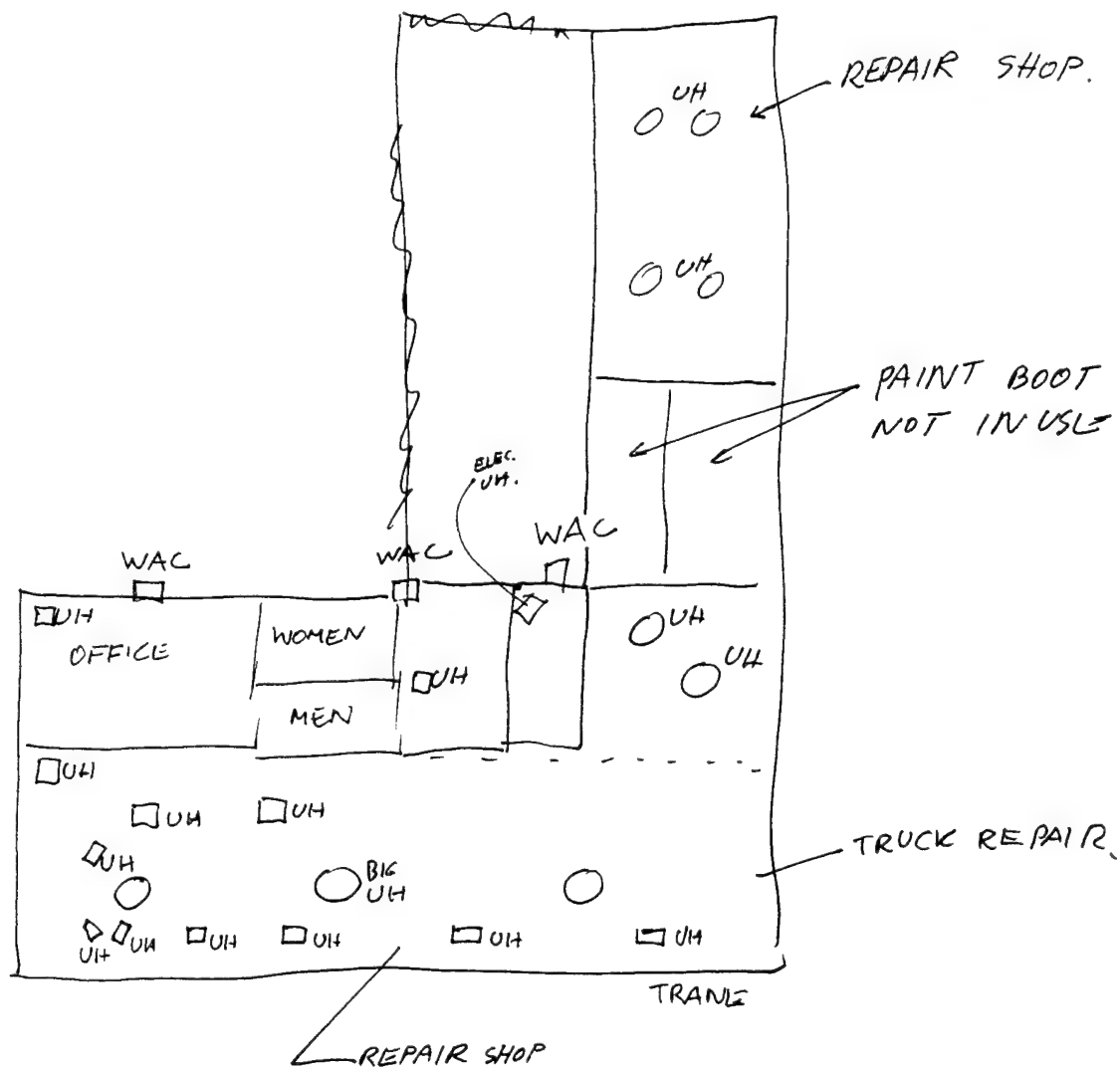
SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-8-92

CHECKED BY _____ DATE _____

SCALE _____

BLDG 401G.



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 401

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/7/92

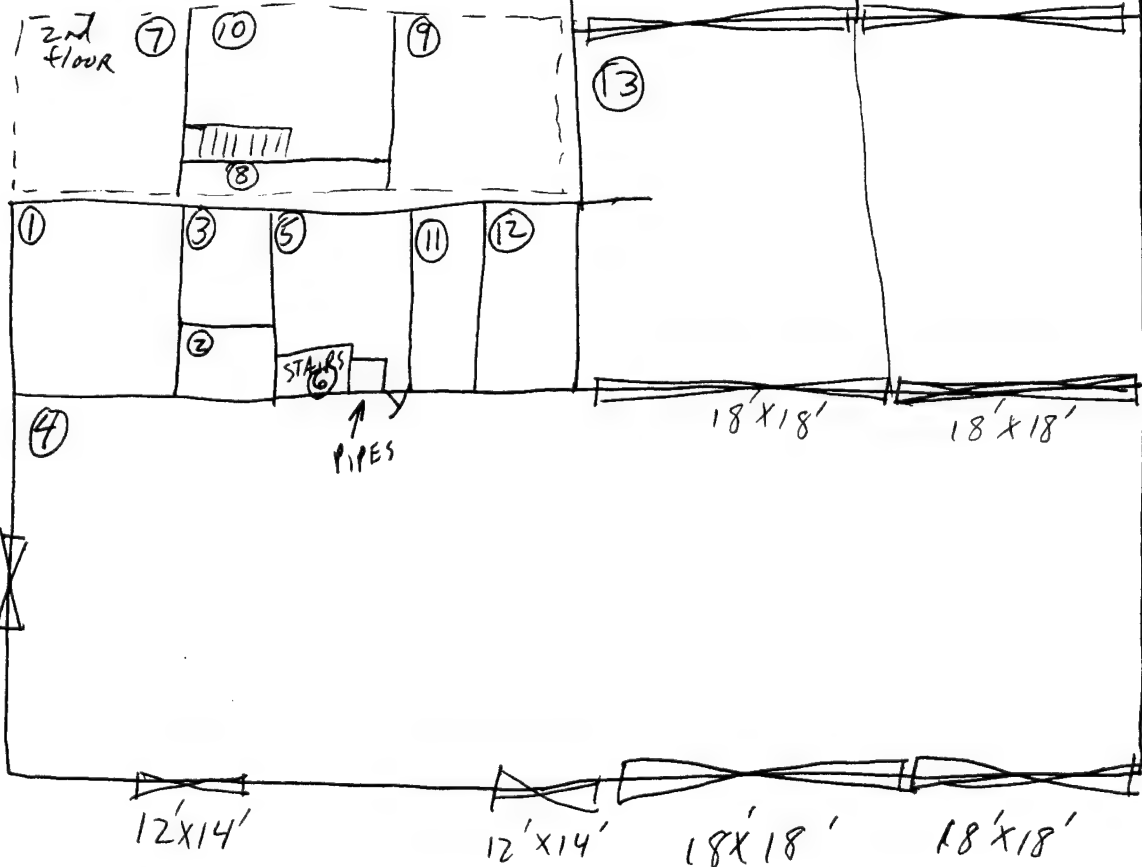
CHECKED BY _____ DATE _____

SCALE _____

5
27
12 216
12 1
96
96
0

4N

12'x14'



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 401 G.

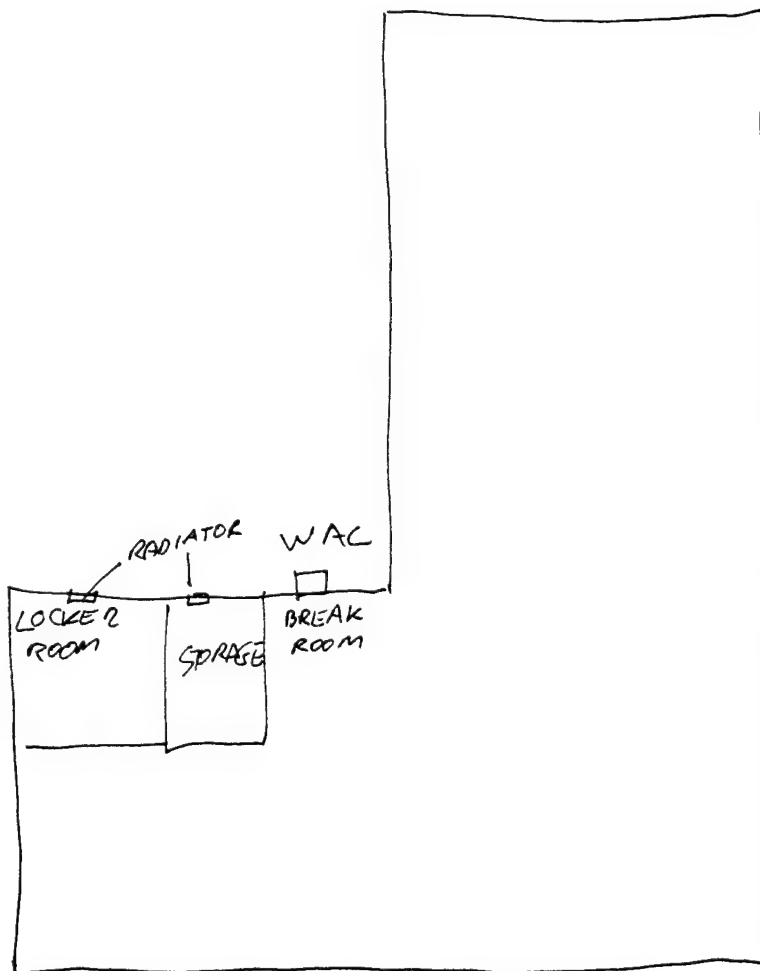
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY LC DATE 8-8-92

CHECKED BY _____ DATE _____

SCALE _____



UPSTAIR

BUILDING 403

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ.#

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

JW

CHECKED BY:

DATE:

1/7/92

BLDG.#

403-G

ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
SOUTHWEST MEN'S ROOM	120°F
NORTHWEST MESS HALL	136°F
* NORTH BATHROOM	156°F
PROBLEMS:	

COMMENTS:

OPERATING HRS. 7:30 - 4:30pm

THIS BUILDING IS A MESS HALL STORAGE ~~FACILITY~~ FACILITY

* OLD WATER HEATER (ELECTRIC) IS SET TOO HIGH.

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: KC
CHECKED BY: _____
DATE: 1-7-92

BLDG.#
ECO 5

403

MOTORS

MOTOR #	<u>1</u>	HP	<u>1/2</u>	PH	<u>10</u>	RPM	<u>1725</u>
MODEL #	<u>AAC17DK14A</u>	VOLTS	<u>115</u>	AMPS	<u>8.8</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>LESSON</u>	REQUIRED HR.		TO			
FRAME	<u>LS 56C</u>	EFF.	<u>62</u>				
DESCRIPTION	<u>COND. PUMP 1 & 2</u>	COMMENTS	<u>FLOAT SW.</u>				
MOTOR #	<u>2</u>	HP	<u>3/4</u>	PH	<u>1</u>	RPM	
MODEL #	<u>11A5077</u>	VOLTS	<u>220</u>	AMPS	<u>5.9</u>		
SERIAL #		PRESENT HR.		TO			
MFG	<u>AMERICAN STANDARD</u>	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	<u>AHU</u>	COMMENTS	<u>OLD ASBESTOS IN SUPPLY DUCT</u>				
MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 403

Ft. Gillem.

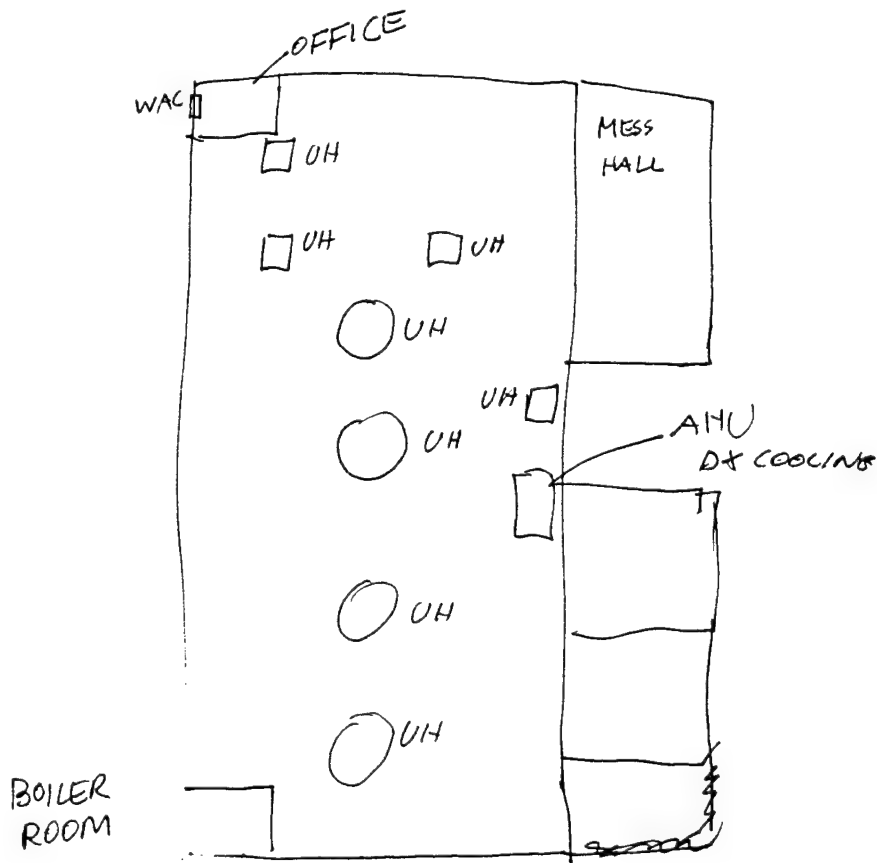
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-7-92

CHECKED BY _____ DATE _____

SCALE _____



* ONLY ○ UH IS WORKING, □ UH NOT WORKING.
CANNOT GET UH NAMEPLATE NOT ACCESSABLE.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 403 G.

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-7-92

CHECKED BY _____ DATE _____

SCALE _____

BLDG 403 FL. GILLEM

BOILER BRYAN FLEXIBLETUBE BOILERS
MOD CLZ70-S-15-FDGO YR 1990
SER 68537 BRYAN NO. 89144Z
INPUT 2700 MBH (MAX) 1350 MBH MIN
OUTPUT 2160 MBH.
15 PSI STM

BUILDING 505

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

DATE:

1-8-92

BLDG.#
ECO 5

505

MOTORS

MOTOR #	1	HP	1/3	PH	3	RPM	3450
MODEL #	1303002110	VOLTS	208	AMPS	1.5		
SERIAL #		PRESENT HR.		TO			
MFG	FRANKLIN ELEC.	REQUIRED HR.		TO			
FRAME	56J	EFF.					
DESCRIPTION	COND. PUMP (2)	COMMENTS	FLOAT SW.				

BLDG 735G
↓

MOTOR #	2, 3	HP	0.75	PH	1	RPM	
MODEL #		VOLTS	240	AMPS	6.8		
SERIAL #		PRESENT HR.		TO	2400		
MFG	COMFORT MAKER	REQUIRED HR.		TO	1900		
FRAME		EFF.					
DESCRIPTION	AHU FOR RACKET BALL DX COOLING. (2 COURTS)	COMMENTS	ELEC. HEATER 208V 3Ø 34A				

MOTOR #	4	HP	3/4	PH	3	RPM	1750
MODEL #	NO MOD. # HYDROFLOW ELECTRIC MTR.	VOLTS	208	AMPS	2.5		
SERIAL #		PRESENT HR.		TO	2400		
MFG	BELL & GOSSETT	REQUIRED HR.		TO	1900		
FRAME	203	EFF.					
DESCRIPTION	HWPUMP NEAR BIG BOILER	COMMENTS					

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 505

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/8/92

CHECKED BY _____ DATE _____

SCALE _____

BOILER #2 SOUTH

MOHAWK

M# 4-5-5081-GP S# 9510

508ft² 5/16" shell thick

MAX STEAM_{WP} 15 PSIG

STEAM CAP = 3450 lb/hr.

CTRL. CKT = 1 ϕ 5A 120V

BURNER = 3 ϕ 7.4A 3HP 240V
MOTOR

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG. 505 G.

JOB 3105.000

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-8-92

CHECKED BY _____ DATE _____

SCALE _____

BOILER/ SMOHAWK BOILER BURNER UNIT

MOO. 1-5-508

NAT'L BOARD NO. 9607

HEAT SURFACE 508 SQ. FT. YR 1983

STM CAP. 3450 LBS HRS.

BOILER-MODEL 1-5-508-GP SN 9607

MAX FIRING RATE 4200 CU' FT/HR

MIN " " 21400 CU' FT/HR.

NAT GAS

30 GAL/HR

10 GAL/HR

NO. 2 FUEL OIL.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

Ft Gill

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY RMS DATE _____

CHECKED BY _____ DATE _____

SCALE _____

List of Boilers Shut off 8 hr

505

511

512

213

114

101

304

308

403

Left on

935 - Gya

205 - liquor store

103 ~~203/4~~ - Fire dept

735 chapel (thick)

BUILDING 506

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

See Bldg.

512

BUILDING 507

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

See Bldg.

512

BUILDING 508

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

See Bldg.

512

BUILDING 509

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

See Bldg.

512

BUILDING 510

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

See Bldg.

512

BUILDING 511

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

See Bldg.

512

BUILDING 514

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

See Bldg.

512

BUILDING 512

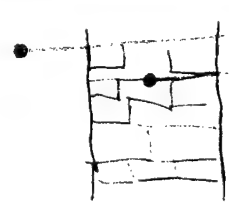

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. OF
CALCULATED BY: CRL
CHECKED BY:
DATE: 1/9/92

BLDG.# 512-6
ECO 1

WALL & ROOF INSULATION

AREAS IN SQ. FEET	NORTH	SOUTH	EAST	WEST
WALLS	600	186		
WINDOWS	52" x 18" 15.30	52" x 13" 40	42" x 5" + 20" x 20" 30 + 20" x 12" x 12" 12 + 12" x 15" + 20" 198	70" x 5" x 3" 100
OVERHEAD DOORS	6 - 10' x 10'	1 - 2' x 15'	7 - 2' x 15'	2 - 10' x 10'
PERSONNEL DOORS	1 - 48" x 96" 1 - 72" x 36"	Ø	5 - 72" x 36"	2 - 48" x 96"

SKETCH WALL CROSS-SECTION	COMPONENTS
	1. OUTSIDE AIR FILM 2. 12" BRICK 3. 4. 5. 6. 7. INSIDE AIR FILM
SKETCH ROOF CROSS-SECTION	COMPONENTS
	1. OUTSIDE AIR FILM 2. 2 PLY ROOF 3. ROOF DECK 4. 5. 6. 7. INSIDE AIR FILM
PERSONNEL DOOR TYPE 1/2 METAL 1/2 GLASS	BASEMENT []
OVERHEAD DOOR TYPE METAL ROLL UP	SLAB []
	CRAWL SPACE []

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ.#
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000
OF
KC
1-9-92

BLDG.#
ECO 1

0126

PIPE INSULATION

LOCATION	PIPE DIAMETER	PIPE LENGTH	FLUID TYPE	FLUID TEMP.	AIR TEMP.	INSULATION TYPE	INSULATION THICKNESS	INSULATION CONDITION
AHU NORTH	1 1/2"	20'	HW		63°F	FIBER G.	1"	*
AHU SOUTH	1 1/2"	50'	STM		63°F	NONE	NONE	
SOUTH BAYS	6'	15'	STM		63°F	FIB. G. w/ PAPER	1"	NBEO REPAIR
BAY 4	VARIOUS		STM					GOOD
BAY 3	2"	30'	STM					NBEO REPAIR
BAY 2	VARIOUS		STM					GOOD
BAY 1	VARIOUS		STM					GOOD

COMMENTS:
* NO INSULATION ON CORNERS (3)

** NO INSULATION

*** HAS BEEN REINSULATED

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

DATE:

5/26

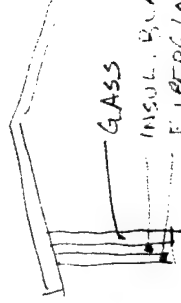
[illegible]

COMMENTS: * NEED TO INSULATE SUPPLY AIR DUCT (\approx THE LENGTH OF BAYS)

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

DATE:

512



FIBERGLASS BOARDS (GREEN)

[illegible]

COMMENTS: * See Eco1 Form For Glass Area

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. OF
CALCULATED BY: UBL
CHECKED BY:
DATE: 1/9/92

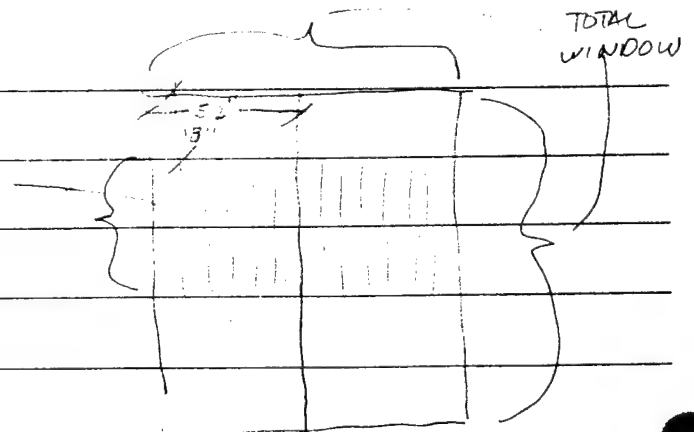
BLDG.# 512-G
ECO 3

WEATHERSTRIPING AND CAULKING

DOOR/ WINDOW	CONDITION OF W.S./CAULK	INFILTRATION	ORIENTATION	DIMENSIONS (INCH)
P. DOOR	W.S. NONE	HIGH	ALL	48x96
WINDOW	CAULK WITH W.S. NONE	MED	ALL	52x18 sections x-
P. DOOR	W.S. NONE	HIGH	E	72"x 36"
OVERH. DOOR	W.S. TOP BOTTOM	HIGH	ALL	10' x 10'

COMMENTS:

48x48" VENT FAN OPEN



THIS PART
OPENS NO
WEATHERSTRIP

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

BLDG.# 512
ECO 4

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/9/92

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
MEN'S ROOM WEST BAY #2	101°F
BREAK ROOM NORTHWEST BAY #1	129.4°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

DATE:

1-9-92

BLDG.#

512 G

ECO 5

MOTORS

MOTOR #	4	HP	3	PH	3	RPM	
MODEL #	BH15C	VOLTS	208	AMPS	7.6		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	TRANE	REQUIRED HR.	700	TO	1545		
FRAME		EFF.					
DESCRIPTION	AHU SOUTH END DX STM	COMMENTS	NO MOTOR NAME PLATE AHU TAG. RECORDED				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1-9-92

BLDG.# 512 G
ECO 5

MOTORS

MOTOR #	HP	PH	RPM
MODEL #	VOLTS	115 V	AMPS
SERIAL #	PRESENT HR.	TO	
MFG	REQUIRED HR.	TO	
FRAME	EFF.		
DESCRIPTION	UNIT HEATER A	COMMENTS	CAN NOT GET NAME PLATE

MOTOR #	2	HP	5	PH	3	RPM	17400
MODEL #	UVE184TTDR7627ACL	VOLTS	200	AMPS	14.8		
SERIAL #		PRESENT HR.	0600	TO	1600		2400
MFG	MARATHON	REQUIRED HR.		TO			
FRAME		EFF.	85.5				
DESCRIPTION	AHU NORTH END	COMMENTS	TIME CLOCK w/ PINS.				
	DX						
	HW						

MOTOR #	3	HP	1/12	PH	1	RPM	1725
MODEL #	M09186 3-84	VOLTS	115	AMPS	1.8		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	B & G.	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	HW. CIR. PUMP	COMMENTS	SERVE HEATING COIL OF AHU.				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ. #

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

1-9-92

DATE:

BLDG. #

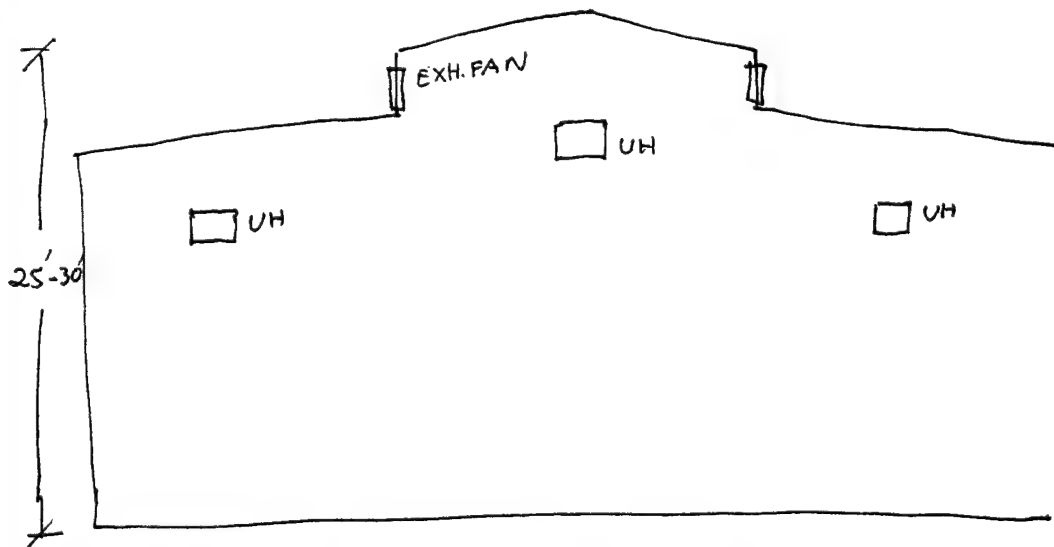
512 G

ECO 10

AIR STRATIFICATION

LOCATION	BAY 1 (TYP. FOR ALL BAYS)	REQ. TEMP.	
TEMP. AT TSTAT		SOURCE	UH.
TEMP. AT CEILING	71' F	OPP. HOURS	0700 TO 1545
TEMP. AT FLOOR	63 F		

SKETCH ROOM - DIMENSIONS, T-STATS, DUCTS, FANS, ETC.



COMMENTS: EVERY BAY HAS 4 EXH. FANS.

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ.# EMC # 3105.000

SHEET NO. _____ OF _____

CALCULATED BY: CS

CHECKED BY:

DATE: 1-9-92

BLDG.# 512
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
1	43	2 ^{8'}	96	F	ON	Y	N	12 ^{CB}	N
2	4	2 ^{8'}	96	F	ON	Y	Y	1	Y
3	4	2 ^{8'}	96	F	ON	Y	N	2 2	N
4	4	2 ^{8'}	96	F	ON	Y	N	2 2	N
4	4	4	34	F	ON	Y	N	2 2	N
5	12	4	34	F	ON	Y	N	2	N
1	1	1	34	F	ON	Y	N	1	Y
6	67	2 ^{8'}	96	F	ON	Y	N	8 ^{CB}	N
7	3	2 ^{8'}	96	F	ON	Y	N	1	Y
8	3	2 ^{8'}	96	F	ON	Y	N	1	N
9	1	4	34	F	ON	Y	N	1	N
10	1	4	34	F	ON	Y	N	1	Y
11	70	2 ^{8'}	96	F	ON	Y	N	16 ^{CB}	N
	1	2	34	F	ON	Y	N	1	Y
12	106	2 ^{8'}	96	F	ON	Y	N	19 ^{CB}	N
	5	4	34	F	ON	Y	N	1	N
	6	1	200	I	OFF	Y	N		N
13	4	2 ^{8'}	96	F	ON	Y	N	1	N

NEXT
PAGE
ALSO

OF EXIT SIGNS - _____

COMMENTS: _____

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
 PROJ.# EMC # 3105.000
 SHEET NO. _____ OF _____
 CALCULATED BY: CS
 CHECKED BY: _____
 DATE: 1-9-92

BLDG.# 512
EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS -

COMMENTS: _____

JOB _____
FIGURE # _____
SHEET NO. _____ OF _____
CALCULATED BY: CEL
CHECKED BY: _____
DATE: 1/9/92

VI. BUILDING DATA SURVEY OBSERVATIONS

BLDG NO: 512-G BLDG NAME: WAREHOUSE JOB: 3105.000
PRIMARY FUNCTION: _____ GROSS SQ FT _____ NO OF FLRS 1
BUILDING MANAGER NAME: _____
PHONE: _____ OFFICE NO. _____
SPECIAL AREAS: COMPUTER FACILITY [] - ZONE NO'S. _____
AUDITORIUM [] - ZONE NO'S. _____
LABORATORIES [] - ZONE NO'S. _____
CAFETERIA [] - ZONE NO'S. _____
OTHER [] - ZONE NO'S. _____
ZONE NO. 1 FUNCTION: WAREHOUSE SPECIAL REQ. YES [] NO []
LOCATION: _____ (IDENTIFIED ON FLOOR PLAN [])
OCCUPANCY HOURS: M-F 7:00 TO 3:45, SAT 0 TO 0, SUN 0 TO 0
PRESENT TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F
REQUIRE TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F

REMARKS: WAREHOUSE HEATING ONLY
ZONE NO. _____ FUNCTION: _____ SPECIAL REQ. YES [] NO []
LOCATION: _____ (IDENTIFIED ON FLOOR PLAN [])
OCCUPANCY HOURS: M-F _____ TO _____, SAT _____ TO _____, SUN _____ TO _____
PRESENT TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F
REQUIRE TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F
REMARKS: _____

ZONE NO. _____ FUNCTION: _____ SPECIAL REQ. YES [] NO []
LOCATION: _____ (IDENTIFIED ON FLOOR PLAN [])
OCCUPANCY HOURS: M-F _____ TO _____, SAT _____ TO _____, SUN _____ TO _____
PRESENT TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F
REQUIRE TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F
REMARKS: _____

ZONE NO. _____ FUNCTION: _____ SPECIAL REQ. YES [] NO []
LOCATION: _____ (IDENTIFIED ON FLOOR PLAN [])
OCCUPANCY HOURS: M-F _____ TO _____, SAT _____ TO _____, SUN _____ TO _____
PRESENT TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F
REQUIRE TEMP: WINTER OCC _____ °F UNOCC _____ °F, SUMMER OCC _____ °F UNOCC _____ °F
REMARKS: _____

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

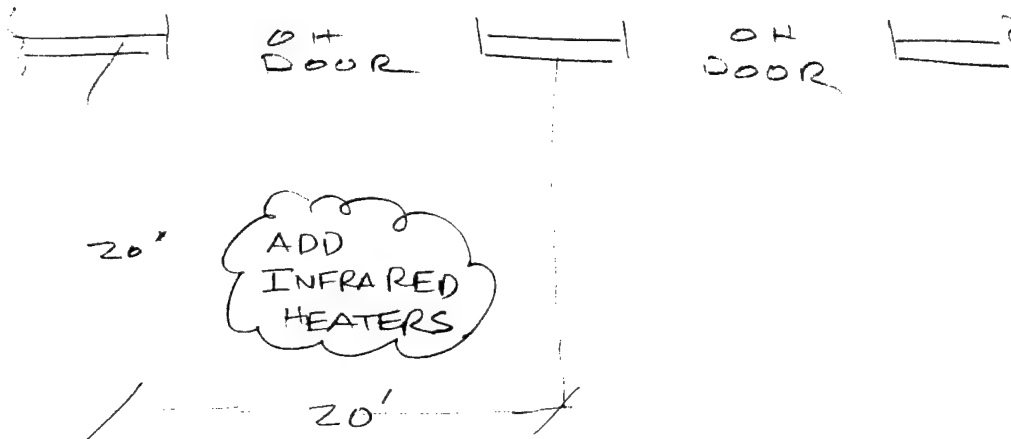
CALCULATED BY CRU DATE 1/9/92

CHECKED BY _____ DATE _____

SCALE _____

512-4

O.H. DOORS & I.R. HEATERS



ESTIMATE EACH DOOR USED
1 HOUR PER DAY

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 512

JOB Gillem

SHEET NO. _____ OF _____

CALCULATED BY CS DATE 1-9-92

CHECKED BY _____ DATE _____

SCALE _____

Two
~~One~~ foot tear in the 3rd bay South
End. Small piping.

Two foot tear in North end of the
3rd bay. Two sections are missing covering
paper. Small piping.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

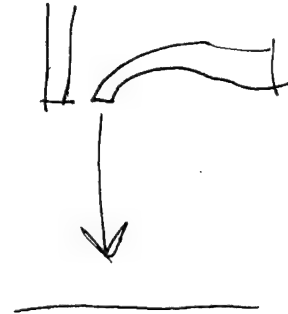
CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

512

HAS AIR CURTAINS?
OK DOOR (WELL SEALED)



DOORS LEFT OPEN WITH UH ON

VENTILATION FANS IN CUPICO
BAROMETRIC DAMPERS

GAS UH & HW OR SM UH

TEMP 2 75°F ONE BAY (LIQUOR STORE)
65°F OTHERS

→ 74°F T/S SETPOINT
TIMECLOCK INOPERABLE

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BUILDING. 512 G¹
WAREHOUSE

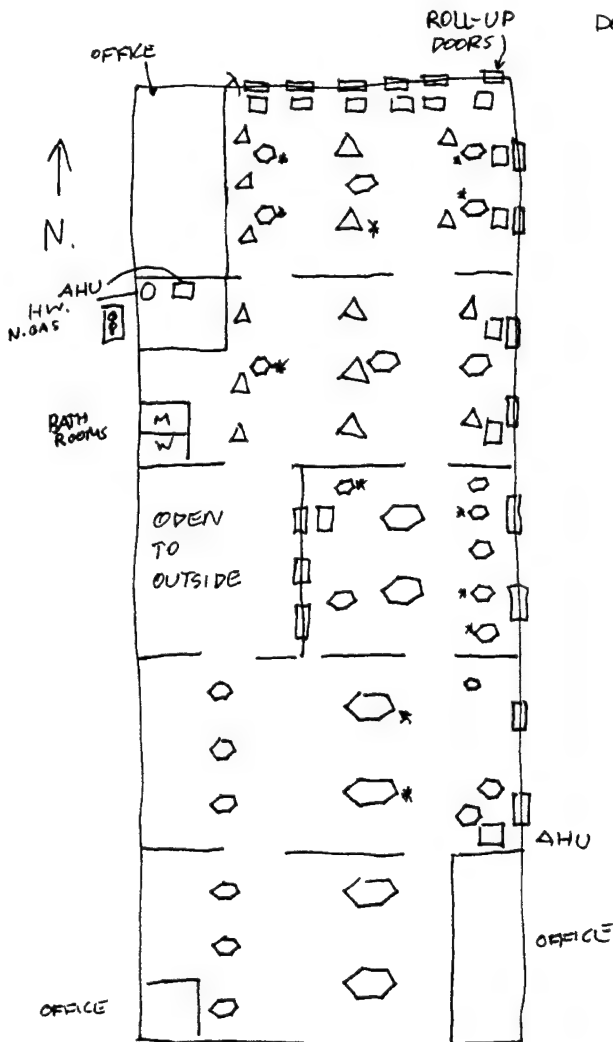
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY VEC DATE 1-9-82

CHECKED BY _____ DATE _____

SCALE _____



DOORS 10' X 10'

DON'T WORK

□ GAS-FIRE UNIT HEATERS OVER ROLL UP DOOR

△ ~ ~ WORKING.

* RUNNING.

⬡ STM COIL UH.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 512

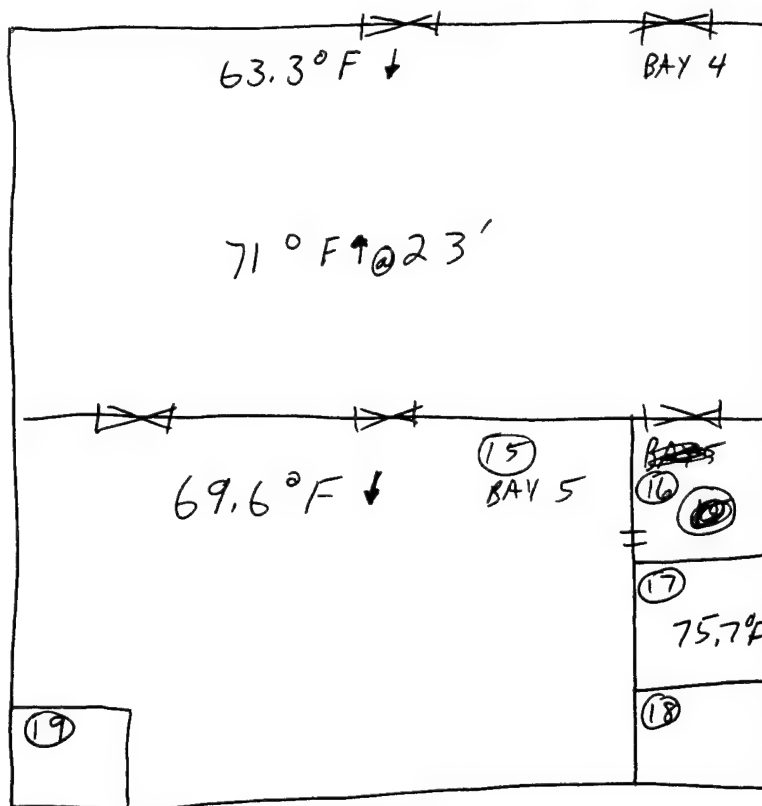
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/9/92

CHECKED BY _____ DATE _____

SCALE _____



OFFICE HRS 7:00 - 3:45 pm

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

B L D G 512

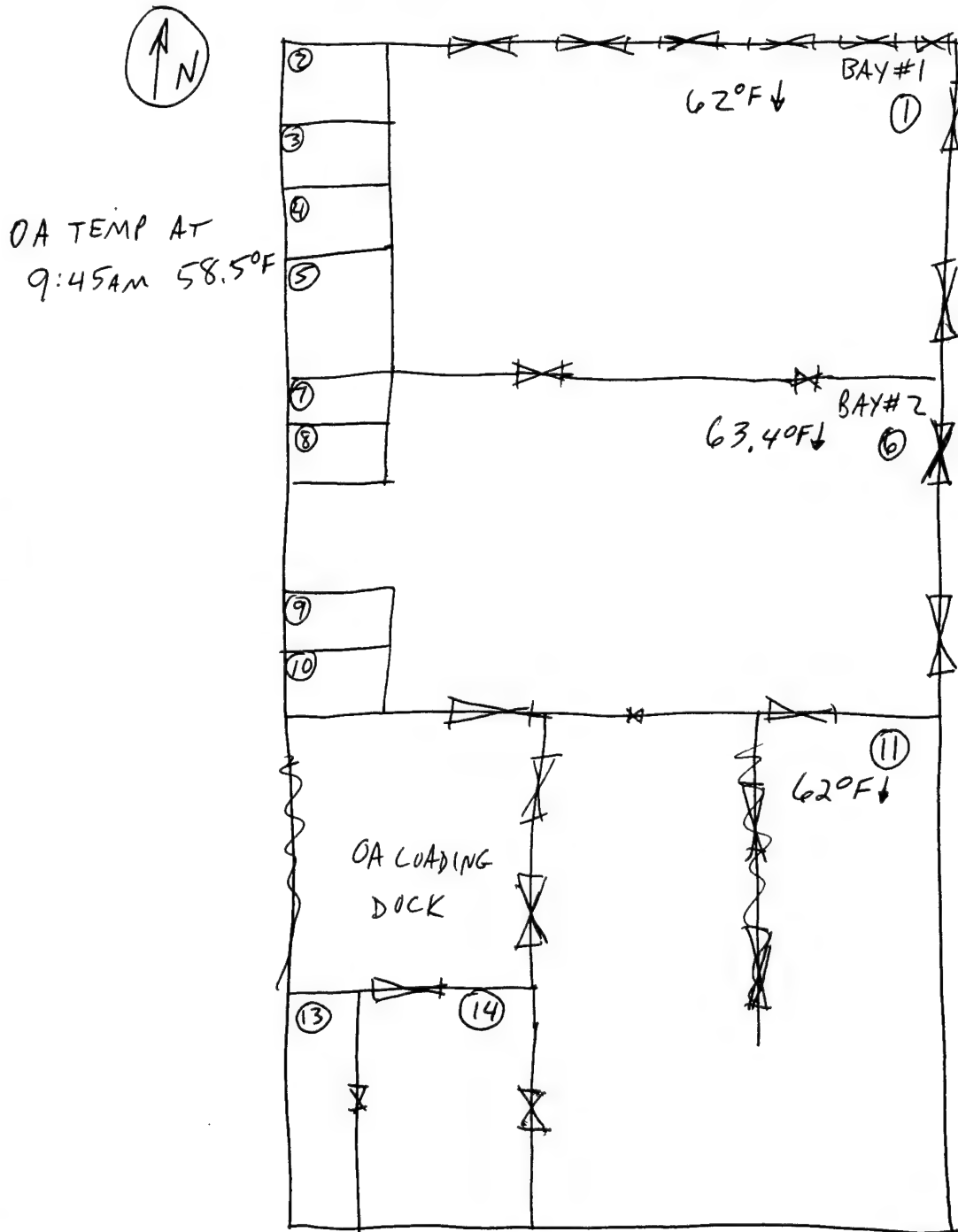
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/9/82

CHECKED BY _____ DATE _____

SCALE _____



BUILDING 513

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ. #

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

JW

CHECKED BY:

DATE:

1/9/92

BLDG. #

513

ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
NORTH EAST WOMEN'S ROOM	144°F
EAST MEN'S ROOM	151°F
PROBLEMS:	

COMMENTS:

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 513

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY JW DATE 1/9/92

CHECKED BY _____ DATE _____

SCALE _____

INADEQUATE LIGHTING

BAY 4, SOUTH TWO ISLES HAVE POOR LIGHTING.

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 5136

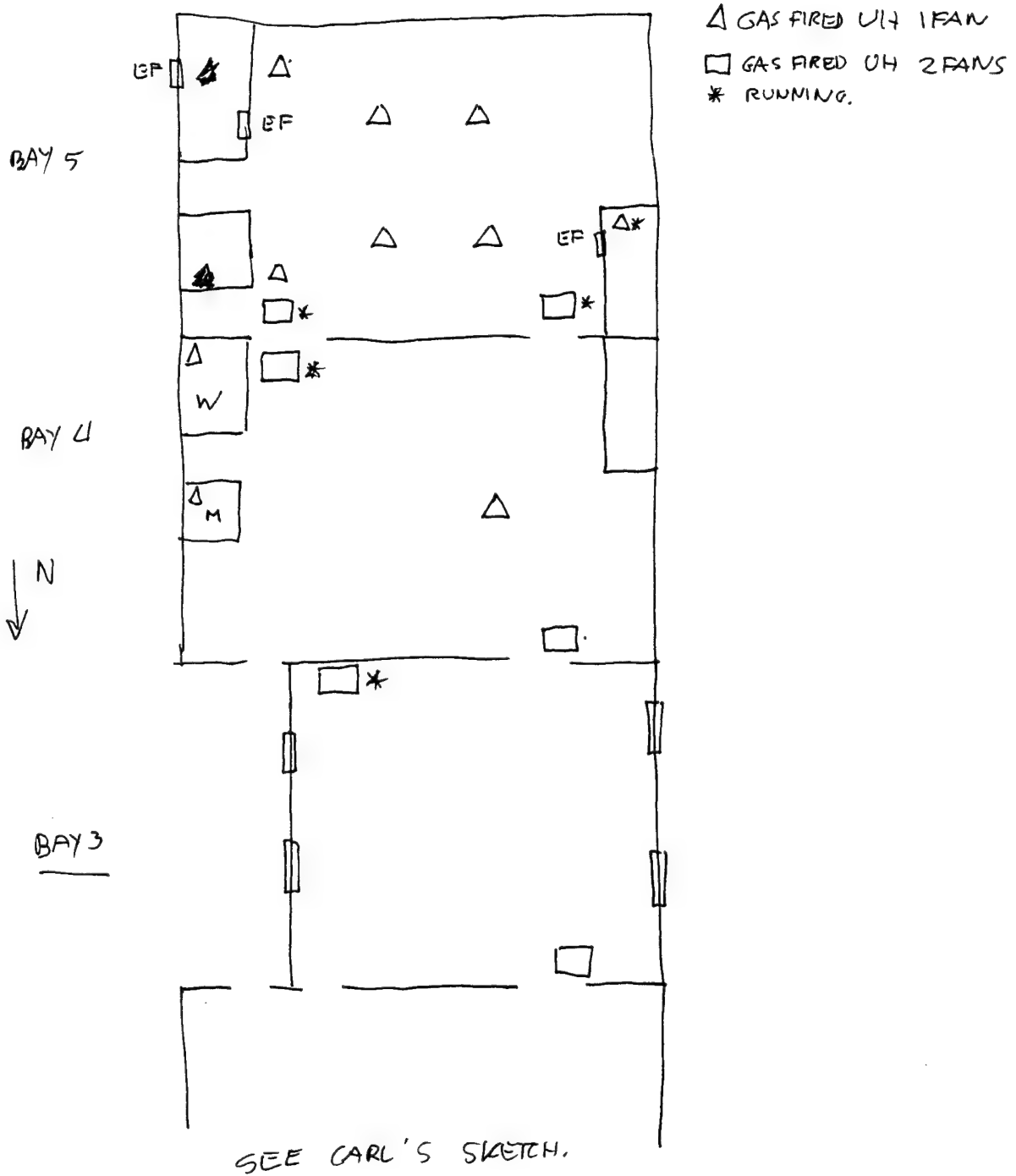
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-9-92

CHECKED BY _____ DATE _____

SCALE _____



E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

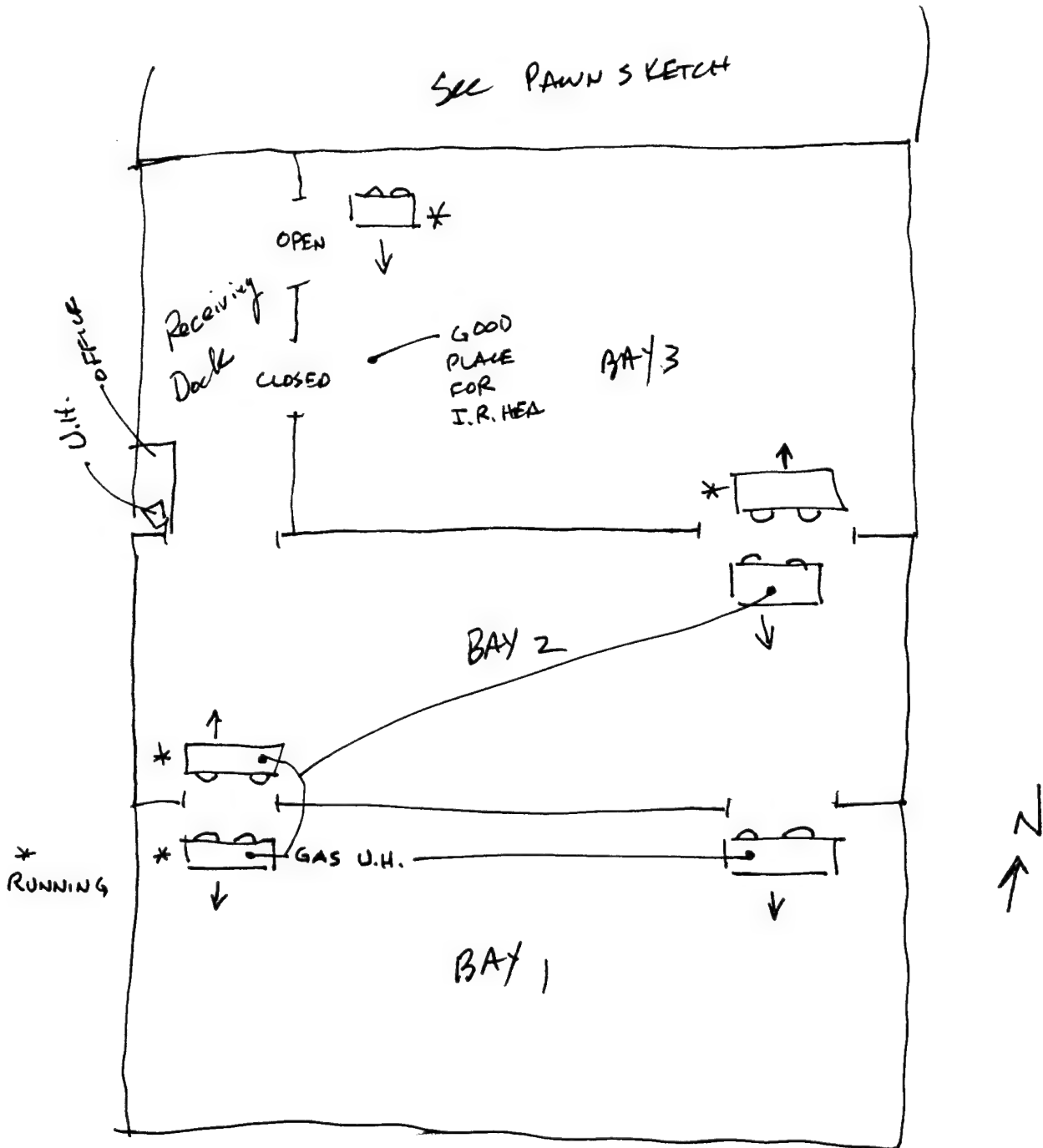
SHEET NO. _____ OF _____

CALCULATED BY CBL DATE 1/9/92

CHECKED BY _____ DATE _____

SCALE _____

513-6



BUILDING 735

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB
PROJ.#
SHEET NO.
CALCULATED BY: J W
CHECKED BY:
DATE: 1/9/92

BLDG.# 735
ECO 1

WALL & ROOF INSULATION

AREAS IN SQ. FEET	NORTH	SOUTH	EAST	WEST
WALLS				
WINDOWS				
OVERHEAD DOORS				
PERSONNEL DOORS				

SKETCH WALL CROSS-SECTION	COMPONENTS
	1. OUTSIDE AIR FILM 2. VINYL SIDING 3. STYROFOAM 1" 4. FRAME 5. GYP BOARD 6. 7. INSIDE AIR FILM

0.17
0.61
0.61
3.33
0.45
0.68

5.85

SKETCH ROOF CROSS-SECTION	COMPONENTS
	1. OUTSIDE AIR FILM 2. SHINGLE 3. WOOD DECK 4. AIR SPACE 5. 6" BLOWN-IN FIBER 6. GYP BRD 7. INSIDE AIR FILM

0.17
0.44
0.62
1.24
20.0
0.45
0.68

23.6

PERSONNEL DOOR TYPE METAL (& WOOD)	BASEMENT []
OVERHEAD DOOR TYPE NONE	SLAB [4]
	CRAWL SPACE []

COMMENTS:

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

JOB
PROJ. #
SHEET NO.
CALCULATED BY:
CHECKED BY:
DATE:

BLDG.#
ECO 1

735 G

[illegible]

COMMENTS:

Ft. McPherson/Ft. Gillem Energy Study
EMC # 3105.000

EMC # 3105.000

8

W

CHECKED BY:

26/6/1

735

FCO2

WINDOWS SURVEY

[illegible]

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: J W
CHECKED BY: _____
DATE: 1/9/92

BLDG.#
ECO 3

735

WEATHERSTRIPING AND CAULKING

DOOR/ WINDOW	CONDITION OF W.S./CAULK	INFILTRATION	ORIENTATION	DIMENSIONS (INCH)	
DW	FAIR	LOW	E	30X53	1
D		MED	E	64X80	1
W		LOW	E	30X27	1
D		MED	N	64X80	2
W		LOW	N	30X53	1
D		MED	N	30X70	1
W		LOW	W	30X54	2
D		HIGH	S	64X80	2
W		LOW	S	30X54	1
W	V	LOW	S	30X27	1

COMMENTS:

DOUBLE DOOR ON SOUTH EAST CORNER HAS $\frac{1}{4}$ " AIR
GAP BETWEEN.

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/9/92

BLDG.# 735
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
MEN'S	155°
WOMEN'S	155°
PROBLEMS:	

COMMENTS:

ELECTRIC

AIR TEMP = 68°F

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: KC
CHECKED BY: _____
DATE: 1-9-92

BLDG.# 735
ECO 5

10+ HP MOTORS

MEASURED

MOTOR#	<u>1</u>		PHASE A	PHASE B	PHASE C
DESCRIPTION	<u>AHU</u>	VOLTS	<u>2084</u>	<u>2084</u>	
MFG	<u>GOULD</u>	AMPS	<u>23</u>	<u>23</u>	
MODEL #	<u>6339075-U</u>	KVAR	<u>5.4</u> <u>4.56.2</u>		
SERIAL #		KVA	<u>4 8.2</u>		
FRAME	<u>3 215T</u>	KW	<u>1.76.2</u>		
HP	<u>10</u>	RPM	<u>1750</u>	PF	<u>75.6</u>
VOLT	<u>200</u>				
AMPS	<u>30</u>		PRESENT	TO	
EFF.			REQ HR.	TO	
COMMENTS	<u>T'STAT CONTROL @ 70°F.</u>				

MOTOR#			PHASE A	PHASE B	PHASE C
DESCRIPTION		VOLTS			
MFG		AMPS			
MODEL #		KVAR			
SERIAL #		KVA			
FRAME		KW			
HP		RPM		PF	
VOLT					
AMPS			PRESENT	TO	
EFF.			REQ HR.	TO	
COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1-9-92

BLDG.# 735
ECO 5

MOTORS

MOTOR #	1	HP	10	PH	3	RPM	1750
MODEL #	6339075-01	VOLTS	200	AMPS	30		
SERIAL #		PRESENT HR.		TO			
MFG	GOULD	REQUIRED HR.		TO			
FRAME	S215T	EFF.					
DESCRIPTION	AHU MOTOR SEE 10 HP FORM	COMMENTS	NOT RUNNING. NEITHER AS BOILER BUILDING LOCK.				

MOTOR #	2	HP	1/2	PH	1	RPM	1725
MODEL #	8-16578-20	VOLTS	115	AMPS	7.3		
SERIAL #		PRESENT HR.	0	TO	2460		
MFG	CENTURY	REQUIRED HR.		TO			
FRAME	J56J	EFF.					
DESCRIPTION	HW PUMP	COMMENTS	RUNNING				

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

BUILDING 918

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJ.#

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

CS

CHECKED BY:

DATE:

1-9-92

BLDG.#
ECO 4

918

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
SINK IN MECH. ROOM (NEXT TO HEATER)	131° F
MEN'S ROOM	127° F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KC

CHECKED BY:

1-9-92

DATE:

BLDG.#

918 G

ECO 5

MOTORS

MOTOR #	1	HP	2	PH	3	RPM	1725
MODEL #	8-16460-01	VOLTS	230	AMPS	6.8		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	MAGNETEK	REQUIRED HR.	M-SAT 3:00PM-11:00PM SUN 1:00PM TO 9:00PM				
FRAME	PA56	EFF.					
DESCRIPTION	AHU.	COMMENTS					
DX HEAT PUMP							

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

MOTOR #		HP		PH		RPM	
MODEL #		VOLTS		AMPS			
SERIAL #		PRESENT HR.		TO			
MFG		REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION		COMMENTS					

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. OF
CALCULATED BY: JW
CHECKED BY:
DATE: 1/9/92

BLDG.# 918 BOWLING
ECO 15

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
1	2 6	4	34	F	ON	Y	N		N
2	1	2	34	F	OFF	Y	Y	1	N
3	2	2	34	F	OFF	Y	N	1	N
4	2	1	100	I	OFF	Y	N	1	N
5	7	2	34	F	ON	Y	N	1	N
6	3	2	96	F	OFF	Y	Y	1	N
7	7	4	34	F	ON	Y	N	1	N
8	2	2	34	F	ON	Y	N Y	1	Y
9	2	4	34	F	ON	Y	Y	1	Y
10	2	2	34	F	ON	Y	N	1	Y
11	5	4	34	F	ON	Y	N	1	Y
12	2	2-U		F	OFF	Y	N	1	N
13	$\frac{2}{1}$	$\frac{2-4}{2}$	$\frac{34}{2}$	F	ON	Y	N	1	Y N
14	1								

OF EXIT SIGNS - _____

COMMENTS: _____

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

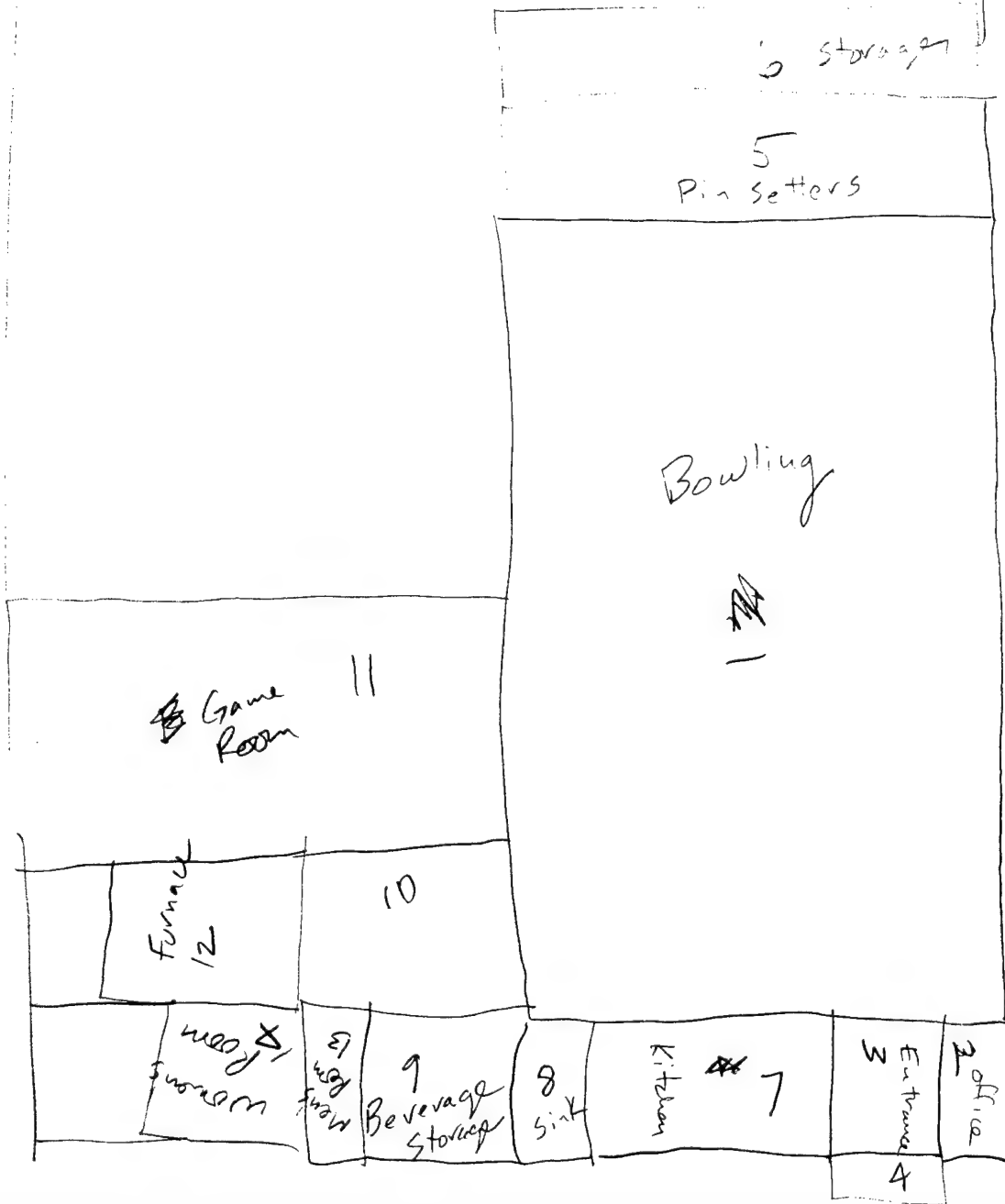
SHEET NO. _____ OF _____

CALCULATED BY CKE DATE 1/9/92

CHECKED BY _____ DATE _____

SCALE _____

918



BUILDING 935

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJ.# EMC # 3105.000
SHEET NO. _____ OF _____
CALCULATED BY: JW
CHECKED BY: _____
DATE: 1/9/92

BLDG.# 935
ECO 4

DOMESTIC HOT WATER

FAUCET LOCATION	WATER TEMPERATURE
MEN'S LOCKER RM.	129°F
PROBLEMS:	

COMMENTS:

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KCC
CHECKED BY:
DATE: 1-9-92

BLDG.#
ECO 5

935 G

MOTORS

MOTOR #	5	HP	5	PH	3	RPM	3460
MODEL #	6-35725-01	VOLTS	230	AMPS	12.8		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	CENTURY	REQUIRED HR.	0700	TO	1900		
FRAME	182TO	EFF.	82.5	PF	89.5		
DESCRIPTION	#1 HWP NEAR BOILER		COMMENTS MAKE ALOT OF NOISE				

MOTOR #	6	HP	5	PH	3	RPM	1740
MODEL #	2N9375	VOLTS	208	AMPS	14.7		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	DAYTON.	REQUIRED HR.	0700	TO	1900		
FRAME	215	EFF.	86.5		M-1F		
DESCRIPTION	AHU-5 NEAR BOILER		COMMENTS HEATING ONLY				

MOTOR #	7	HP	1/12	PH	1	RPM	1725
MODEL #	M09181 4-84	VOLTS	115	AMPS	1.75		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	BD	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	#003 HW CIRC PUMP.		COMMENTS OFF DURING SURVEY				

EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study
PROJECT NO. EMC # 3105.000
SHEET NO. OF
CALCULATED BY: KC
CHECKED BY:
DATE: 1-9-92

BLDG.# 935 G.
ECO 5

MOTORS

MOTOR #	1	HP	1 1/2	PH	3	RPM	1750
MODEL #	184-71225-00	VOLTS	208	AMPS	4.8		
SERIAL #		PRESENT HR.					
MFG	WAGNER	REQUIRED HR.					
FRAME	184	EFF.					
DESCRIPTION	AHU IN WEIGHT ROOM #4	COMMENTS	T' STAT CONTROL OLD MOTOR.				

MOTOR #	2,3	HP	3/4	PH	1	RPM	-
MODEL #		VOLTS	240	AMPS	6.8		
SERIAL #		PRESENT HR.					
MFG	COMFORTMAKER	REQUIRED HR.					
FRAME		EFF.					
DESCRIPTION	AHU FOR RACKETBALL COURT #2,3 (2) DX COOLING	COMMENTS	ELEC HEATER 208V 3Ø 3AA				

MOTOR #	4	HP	3/4	PH	3	RPM	1750
MODEL #	NO MODEL # HYDRO FLOW ELEC. MOTOR	VOLTS	208	AMPS	2.5		
SERIAL #		PRESENT HR.					
MFG	BEG	REQUIRED HR.					
FRAME	203	EFF.					
DESCRIPTION	HW PUMP NEAR BOILER #12	COMMENTS	OLD MOTOR				

EMC ENGINEERS, INC.

DENVER * ATLANTA * GERMANY

JOB

Ft. McPherson/Ft. Gillem Energy Study

PROJECT NO.

EMC # 3105.000

SHEET NO.

OF

CALCULATED BY:

KCL

CHECKED BY:

DATE:

1-9-92

BLDG.#

ECO 5

9356

MOTORS

MOTOR #	8	HP	1/6	PH	1	RPM	1725
MODEL #	M10293	1-88	VOLTS	115	AMPS	2.4	
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	BG	REQUIRED HR.		TO			
FRAME		EFF.					
DESCRIPTION	D HW CIRC. PUMP #1						
COMMENTS							
MOTOR #	9	HP	3	PH	3	RPM	3450
MODEL #	14736	VOLTS	200-230/460	AMPS	9.0-8.6		
SERIAL #		PRESENT HR.	0	TO	2400		
MFG	CENTURY	REQUIRED HR.	0700	TO	1900		M-F
FRAME	L56C	EFF.					
DESCRIPTION	HW CIRC. PUMP #2						
COMMENTS	PART 8-142017-01						
MOTOR #	10	HP	2	PH	3	RPM	1750
MODEL #	NO MOD#	VOLTS	208	AMPS	6.1		
SERIAL #	80464	PRESENT HR.	0	TO	2400		
MFG	BG	REQUIRED HR.		TO			
FRAME	224	EFF.					
DESCRIPTION	AHU HEATING COIL #1						
COMMENTS							

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Plg 935

Shower - full flow

30 sec = 9 quarts
7.5 quarts

low full - worst fit

JOB _____

SHEET NO. _____

OF _____

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

CALCULATED BY _____

DATE _____

CHECKED BY _____

DATE _____

SCALE _____

935

> 8 showers in the mens locker rooms

Other ELO's

— low flow showers

—

E. M. C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

BLDG 935G

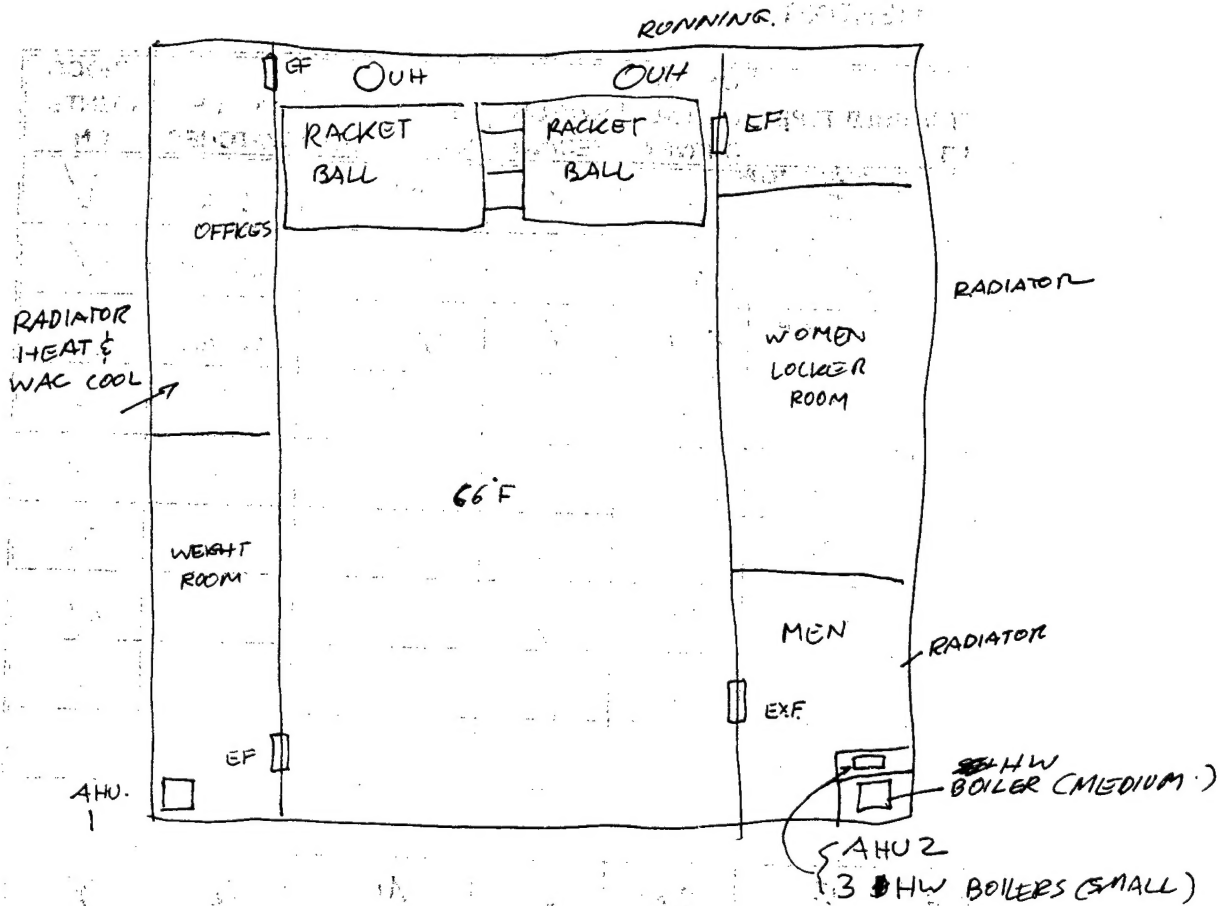
JOB _____

SHEET NO. _____ OF _____

CALCULATED BY KC DATE 1-9-92

CHECKED BY _____ DATE _____

SCALE _____



EMC ENGINEERS, INC.
DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ.# EMC # 3105.000

SHEET NO. OF

CALCULATED BY: JW

CHECKED BY:

DATE: 1/9/92

BLDG.#
ECO 15

935

LIGHTING

ROOM #	# OF FIXTURES	LAMPS/ FIXTURE	WATTS/ BULB	BULB TYPE	ON/OFF DURING SURVEY	SWITCH YES/NO	GOOD FOR OCC. SENSOR	NO. OF SWITCHES	UNOCC LIGHTS ON
1	36	1	400	METAL HALIDE I	ON	Y	N	L.B.	N
2	6	1	400	I MH	ON	Y	N	L.B.	N
3	6	1	400	I MH	ON	Y	N	L.B.	N
4	2	4	34	F	ON	N	Y	0	Y
5	2	1	50	I	ON	N	Y	0	Y
6	3	2	34	F	ON	Y	Y	1	N
6	3	2	34	F	ON	Y	Y	1	N
6	3	2	34	F	ON	Y	Y	1	N
7	under construction								
8	1 1	1	150	I	ON	Y	Y	1	Y
9	9	2	34	F	ON	Y	N	2	Y
10	8	1	150	I	ON	Y	Y	2	Y
2-A	3	1	34	F	ON	Y	Y	1	Y
11	9	2	34	F	ON	Y	Y	2	Y
12	LOCKED								
13	4	1	200 200	I	ON	Y	N	1	Y
14	4	4	34	F	ON	Y	Y	1	N
15	1	2	34	F	OFF	Y	N	1	Y

OF EXIT SIGNS -

COMMENTS:

DENVER * ATLANTA * GERMANY

JOB Ft. McPherson/Ft. Gillem Energy Study

PROJ.# EMC # 3105.000

SHEET NO. 12 OF 12

CALCULATED BY: JVV

CHECKED BY:

DATE:

BLDG.#

EC0 15

LIGHTING

[illegible]

OF EXIT SIGNS -

COMMENTS:

E M C ENGINEERS, INC.

Denver • Colorado Springs • Atlanta • West Germany

JOB _____

SHEET NO. _____

CALCULATED BY CRCL

DATE 1/9/92

CHECKED BY _____

DATE _____

SCALE _____

935

129°F

UPSTAIRS

